Annual Forest Administration Report of the Bombay Presidency including Sind

For the Year 1927-28

Part I

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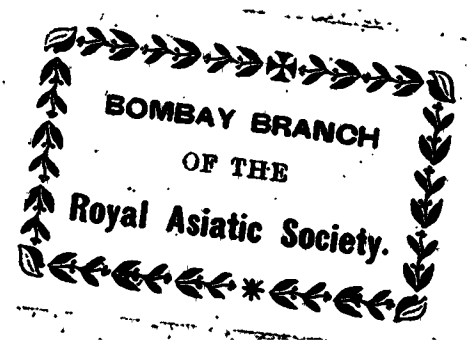

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INTRODUCTION

A new Chapter IV-A has been added in this year's report wherein the activities of and the work done by the Forest Engineering Branch have been recorded.

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List of trees and shrubs mentioned in the Report and their scientific names

Vernacular name	Scientific name
Ain, matti	*Terminalia tomentosa.*
Anjan	*Hardwickia binata.*
Babul	*Acacia arabica.*
Bahan	*Populus euphratica.*
Ber, bor	*Zizyphus jujuba.*
Hirda	*Terminalia chebula.*
Honne	*Pterocarpus marsupium.*
Kandi	*Prosopis spicigera.*
Khair	*Acacia catechu.*
Lantana	*Lantana Camara.*
Mango	*Mangifera indica.*
Mhowra	*Bassia latifolia.*
Nim	*Azadirachta indica.*
Palas	*Buteau fondosa.*
Rosha	*Andropogon Martinii.*
Sandal	*Santalum album.*
Shigekai	*Acacia concinna.*
Shivan	*Gmelina arborea.*
Simul, Sawar	*Bombax malabaricum.*
Sissum	*Dalbergia latifolia.*
Tali	*Dalbergia sissoo.*
Teak	*Tectona grandis.*
Temru	*Diospyros melanoxylon.*
Tiwas	*Ougenia dalbergioides.*

FOREST ADMINISTRATION REPORT OF THE BOMBAY PRESIDENCY INCLUDING SIND FOR THE YEAR 1927-28.

CHAPTER I.

CONSTITUTION OF STATE FORESTS.

1. ALTERATION IN AREA. (Forms 51 to 51D.)

The changes in forest area were as follows :—

Class of Forest	Area on 1st April 1927	Added during the year	Excluded during the year	Area on 31st March 1928
	Sq. miles	Sq. miles	Sq. miles	Sq. miles
Reserved ..	13,737	51	78	13,710
Protected ..	1,220	8	7	1,221
Total ..	14,957	59	85	14,931

The areas added and excluded comprise :—

	Square miles. Gain	Loss
Afforestments against and disforestments in favour of cultivation	·5	26
Alluvial accretions and erosions in Sind ..	16·5	18
Transfer from Reserved forest to Protected forest in Southern and Sind Circles	3	3
Transfer from Protected forest to Reserved forest in Southern and Sind Circles	2	2
Errors corrected in Northern, Central and Southern Circles	37	36
Total ..	59	85
Net loss ..	26 square miles.	

Unrecovered loss is mostly due to disforestments in favour of cultivation in the Panch Mahals, West Khandesh, Poona, Kolaba and Satara Divisions.

The forest area in charge of the Forest and Revenue Departments stood as follows :—

	On 1st April 1927			On 31st March 1928		
	Reserved	Protected	Total	Reserved	Protected	Total
In charge of the Forest Department.	11,750	591	12,341	11,732	590	12,322
In charge of the Revenue Department.	1,987	629	2,616	1,978	631	2,609
Total ..	13,737	1,220	14,957	13,710	1,221	14,931

The Forest area in various Circles at the end of the year was :—

	Square miles.
Northern Circle	3,819
Central Circle	5,331
Southern Circle	4,625
Sind Circle	1,156

2. Forest Settlements. (Form 52.)

The settlement of areas aggregating 104 square miles (105 square miles *minus* one square mile which was eroded before settlement) chiefly in the Northern and Sind Circles was in progress at the beginning of the year and additional areas aggregating 58 square miles chiefly in Sind were taken in hand during the year. The settlement of 5½ square miles chiefly in Sind was completed and 156½ square miles are still in hand. Rs. 1,837 were expended on settlement during the year.

The proposed afforestation of certain waste numbers in Jhalod Mahal (Panch Mahals) has been finally settled in consultation with the Revenue and Forest Departments. The area proposed to be transferred to this Department is 3,068 acres.

Inclusion in Reserved forests of certain rabi numbers in Peint taluka, sanctioned in G. R., R. D., No. 3842 of 1st June 1927 cannot be brought into force until the final notification has been published. The matter is under the consideration of the Collector of Nasik and the Commissioner, Central Division.

The settlement of 1,713 acres in the Kolaba Division is pending final decision on the appeal made by Sardar Biwalkar against the Thana Court's ruling.

3. Demarcation.

Sixty-nine miles of new boundary line were demarcated in the Central, Southern and Sind Circles ; and 49 miles in the Southern and 2 miles in the Sind Circles remain to be demarcated. The work of demarcation

will never be quite completed owing to alterations from year to year due to afforestments and disforestments, accretions and erosions. The existing boundary lines and marks were maintained in a state of repair, most of this work being done by Forest subordinates. Rs. 219 were spent on new work and Rs. 3,175 on repairs to old boundary lines and marks.

The work of demarcating a 30′ line between British and Portuguese territory was resumed in conjunction with the Portuguese Surveyor in Belgaum Division and 5 miles of line were cut during the year at a cost of Rs. 140. The line from Amgaon to Holde 2½ miles, remains to be cleared and will be taken in hand in 1928-29. South of Amgaon from Holde village up to the Kanara, Belgaum, Goa frontier, the line is reasonably clear and no further cutting will be necessary.

4. Forest Surveys.

No Survey work was done during the year by the Survey of India Party No. 8 in Peint. Out of the total area of 97 square miles of the Rabi lands in Peint and Protected forests of Vawar and Vangni to be surveyed on a scale of 4″=1 mile 84 square miles have been done at a cost of Rs. 24,416.

Survey of India Party No. 4 surveyed 78 square miles of forest in Karachi Division (Sind). The cost incurred has not yet been communicated.

The expenditure on the constitution of State forests was as follows :—

Circle.	1927-28.	1926-27.
	Rs.	Rs.
Northern	9,568	13,167
Central	1,215	3,738
Southern	587	407
Sind	....	....
Total ..	11,370	17,312

CHAPTER II.

MANAGEMENT OF STATE FORESTS.

1. Regulation of management.

(a) Preparation and control of Regular Working Plans.

Preparation (Form No. 55).—The work of preparation and revision of Working Plans progressed steadily and satisfactorily under the various Working Plan Officers controlled by their Conservators and the Chief Conservator. The following details summarise the work done :—

Working Plans finally sanctioned by Government :—

(*i*) A revised Working Plan for the Panch Mahals forests.

(*ii*) A revised Working Plan for Series I-VII of the Teak High forests of N. D. Kanara.

(*iii*) A revised Working Plan for the Ankola-Ramanguli High forests Blocks XXIV and XXV in S. D. Kanara.

(*iv*) Working Plan for addition of compartment 32-A of Block XXVI, Kalinadi slopes in W. D. Kanara.

Working Plans approved by the Chief Conservator, and awaiting the sanction of Government :—

(*i*) A revised Working Plan for the Bulsar-Chikhli forests in Surat Division.

(*ii*) A revised Working Plan for Teak Pole, Fuel and Sandalwood forests of Khanapur and Nagargalli Ranges of Belgaum Division.

The Working Plans under preparation for which preliminary reports had been approved by the Chief Conservator in previous year :—

(*i*) A Working Plan for the Below-Ghat forests (Peint and part of Mokhada) of West Nasik Division (since completed and approved by the Chief Conservator).

(*ii*) A revised Working Plan for the Nersol slopes forests, Block XVII in E. D. Kanara (since completed and approved by the Chief Conservator).

(*iii*) A revised Working Plan for the Bhagwati High forests, Blocks VIII, IX and XX in N. D. Kanara (since completed and approved by the Chief Conservator).

(*iv*) A revised Working Plan for the Ankola, Kumta and Honawar-Bhatkal inland forests in S. D. Kanara (since completed but not finally approved by the Chief Conservator).

(*v*) A revised Working Plan for the Scrub forests of the Sakri and Dhulia Ranges in West Khandesh Division.

Forest areas for which Revision Preliminary reports were approved by the Chief Conservator during the year under report :—

(*i*) Scrub jungle and Jamner Teak Pole area in East Khandesh Division.

(*ii*) Umarpata teak in West Khandesh Division.

(*iii*) Taloda Teak Timber and Inexploitable areas in North Khandesh Division.

(*iv*) Tali-palm area in S. D. Kanara.

A scheme for altering the rotation of certain Felling Series of Revised Thana Working Plan, provisionally approved by the Chief Conservator is under the consideration of the local Officers.

The area under Working Plans now amounts to 8,335 square miles, out of a total of 9,260 square miles for which Working Plans are considered necessary and new Plans are now under preparation for 388 square miles out of the 925 square miles for which Plans are still required, in addition to which old Plans are under revision for an area of 767 square miles.

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PLATE No. I

Direct sowings of tali (Dalbergia sissoo) along trenches carried out in July 1926, unspaced.
Age—1 year 9 months.

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Control (*Form No. 55A*).—Prescriptions of the Working Plans in force were carried out with such deviations, as were calculated to result in the better working of the forests. Owing to one or the other of the following reasons, *viz.*, poor quality of the stand, long lead or inaccessibility of the area, scarcity of labour, and continued trade depression with the consequent slump in the market, some coupes or felling areas in almost every Division found no purchasers. Similarly departmental extraction in the High forests of Kanara, specially in the Southern Division, remained in arrears, owing to the difficulty, by no means a rare occurrence, of obtaining contractors to work at reasonable rates. The withdrawal from sale of Khanapur fuel coupes in the previous year had a satisfactory result and coupes were disposed of at fair prices during the year. Similarly, the size of Supa Fuel coupes has been halved to restrict supply, the demand having considerably decreased owing to the M. & S. M. Railway burning coal instead of firewood.

2. Communications and Buildings.

(*a*) *Roads and Bridges.*

Construction work was in progress on 109 miles of new roads and repairs were carried out on 757 miles of old roads. The total expenditure under this head was Rs. 2,52,840 (Rs. 1,37,891 for new works and Rs. 1,14,949 for repairs) as against Rs. 2,11,763 (Rs. 1,00,934 for new works and Rs. 1,10,829 for repairs) during 1926-27. About half the amount on new works was spent on the construction of roads in the Dangs and Peint which contain valuable mature teak going to waste for want of facilities of transport. The amount charged to repairs includes maintenance charges on the Alnawar-Dandeli Railway, *viz.*, Rs. 46,998 against Rs. 47,761 last year and subsidy of Rs. 25,000 to the District Local Board of Kanara.

The work of constructing Katcha roads in the Satpudas undertaken principally to improve the grazing facilities is making steady progress.

The construction of the Baroda section of the Subir-Nawapur road was taken in hand by the Baroda Darbar during the year under report. The completion of this section will furnish a through road from Nawapur in West Khandesh to Subir in the Dangs, and will greatly cheapen the extraction of forest material from these parts.

The Portuguese authorities have not yet started work on the section of the Goldhari-Udhwa road, which passes through their territory. The plan and estimate prepared by them were scrutinised by the Forest Engineer and economies to the extent of Rs. 60,000 suggested to them. It is hoped that the work of construction will be started shortly.

(*b*) *Buildings.*

The total expenditure on buildings was Rs. 1,03,228 of which Rs. 66,682 were on new works and Rs. 36,546 on repairs. Corresponding figures for the previous year are Rs. 1,04,989, Rs. 61,512 and Rs. 43,477. About two-thirds of the expenditure on new works was incurred on subordinates' quarters. Rest houses at Sawarna in the Northern Circle and Ganeshgudi

in the Southern Circle were completed during the year. The Conservators report that the grant for repairs was inadequate and if the buildings are to be kept in good condition, more funds will have to be supplied for the purpose.

(*c*) *Miscellaneous.*

Rs. 11,383 and 10,408 were spent on new works and repairs respectively against Rs. 6,383 and 14,530 in the previous year. The expenditure was incurred on wells, compound walls or fencing, compensation for acquisition of land for the Gokarn Fuel Depot, telephone rent and charges for water supply paid to the Public Works Department, and repairs to Karias, sluices and bunds in Sind.

In the dry Satpudas where improvement of water supply is of great importance, 4 new wells and some shevdis were completed in the East and North Khandesh Divisions. Three wells are under construction.

The improvement of the water supply for villagers and forest staff in the Dangs is a pressing matter. Unfortunately the location of suitable sites for wells is a great difficulty and the progress in construction slow. The services of the Water Diviner could not be availed of for want of funds.

3. PROTECTION OF FORESTS. (Form No. 57.)

(*a*) *General Protection.*

The following statement compares the number of forest offences of the year with those of 1926-27 and the average of the last three years :—

Class of offence	1927-28					1926-27	Average of 1924-1925 to 1926-27
	N. C.	C. C.	S. C.	Sind	Total		
I Injury to forest by fire.	509	608	499	128	1,744	1,944	1,873
II Unauthorised felling or removal of produce.	3,169	3,593	1,302	1,368	9,432	9,876	8,661
III Unauthorised grazing.	2,067	2,317	871	1,533	6,788	7,110	6,514
IV Other offences ..	462	1,255	214	109	2,040	1,911	1,636
Total of 1927-28 ..	6,207	7,773	2,886	3,138	20,004	..	....
Total of 1926-27 ..	6,435	7,802	3,161	3,443	..	20,841	....
Average of 1924-25 to 1926-27.	5,561	6,962	3,156	3,005	..	..	18,684

Compared to 1926-27, there was a decrease of 837 in the total, all the four Circles contributing thereto, and a decrease of 200, 444 and 322 under I, II and III and an increase of 129 under IV. Excepting in the case of fire offences, the number of which can be fairly easily ascertained, no accuracy can be vouchsafed for the number of offences recorded against other heads in view of the fact that only a small proportion of felling and grazing offences is reported. The figures must therefore be regarded

Direct sowings of tali along trenches carried out in July 1926. Age—1 year 9 months. Seedlings spaced in March 1928 to an average distance of 5′. Average height 8′. (Compare with Plate No. I.)

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as giving only a rough idea of the state of protection of our forests. The fire offences decreased in all Circles except the Central, which shows an increase of 76, held to be mainly attributable to the suspension of communal punishment in the two Khandesh and Satara Districts. Illicit fellings continued to be heavy in West Nasik and North and West Thana Divisions where looting is reported to be conducted on a scale suggestive of organization not susceptible of real check otherwise than by enforcement of communal responsibility. The question of communal responsibility has been further discussed under "*Protection from fire.*" The decrease in grazing offences is partly due to the good crop of grass obtained everywhere.

Four hundred and eighty-one new cases were taken into Court during the year. 509 cases including 190 pending from the previous year were decided and of these 461 or 91 per cent. resulted in convictions. 16,505 cases were compounded and compensation amounting to Rs. 1,52,651 was recovered in 15,900 cases the average per case being Rs. 9·6 as compared with Rs. 9·5 in the previous year. Offenders in 605 cases were let off with a warning and in 3,114 or 15 per cent. of the total of new and pending cases the offenders were not detected.

Four cases in Shikarpur Division, 2 in Hyderabad and 1 in Belgaum were taken to Court under Indian Penal Code, the offenders being charged with assaulting the forest subordinates and forcibly rescuing the cattle being taken to pound, or threatening forest subordinates with murder or making false allegations against certain forest subordinates. Three cases resulted in convictions and 4 in acquittals, one of which has been appealed against.

(*b*) *Protection from fire.*

The figures in the sub-joined statement compare the result of the two fire seasons 1st June 1926 to 31st May 1927 and 1st June 1927 to 31st May 1928. These figures do not tally with those in appendix 58 which are for the financial year, *viz.*, 1st April 1927 to 31st March 1928.

Circle	Fire season of	Area attempted to be protected	Failures	Area actually protected	Percentage of area actually protected	Cost	Cost per Square Mile protected
		Sq. miles	Sq. m.	Sq. m.		Rs.	Rs.
Northern ..	1927-28 ..	3,334	80	3,254	98	15,462	4·7
	1926-27 ..	3,349	73	3,276	98	13,960	4·2
Central ..	1927-28 ..	3,305	214	3,091	93	8,858	2·9
	1926-27 ..	2,643	108	2,535	96	8,900	3·5
Southern ..	1927-28 ..	1,613	82	1,531	95	6,409	4·2
	1926-27 ..	1,517	122	1,395	92	5,268	3·8
Sind ..	1927-28 ..	492	5	487	99	230	·5
	1926-27 ..	493	6	487	99	744	1·5
Total ..	1927-28 ..	8,744	381	8,363	96	30,950	3·7
	1926-27 ..	8,002	309	7,693	96	28,872	3·8

The increase in the area burnt in the Northern Circle occurred mainly in the Panch Mahals where the luxuriant crop of grass obtained as a result of good rains was a constant source of damage.

Fire protection in the Central Circle was unsatisfactory, the area burnt during the year under report being double that burnt in the previous year. This increase is, to a great extent, the direct result of the suspension for one year of communal punishment in the 3 Khandesh Divisions and Satara Division, as an experimental measure. The disastrous effect of the further suspension of communal punishment can be judged in the light of the results of a year's suspension, and unless this punitive measure is restored, a very practical weapon for influencing public opinion against forest offences will be lost and Government must be prepared for considerable deterioration in forest protection. Considering that uncontrolled fires result in the wholesale destruction of young growth and are often intentionally started by or at the instigation of villagers to improve grazing in the forests and that in most cases it is impossible to catch the actual offender, the necessity of and justification for communal punishments, which are inflicted only in cases of *persistent* failure of villagers to help in extinguishing fires and even then with the previous sanction of the Collector who is an impartial judge of the circumstances, become apparent. It must be borne in mind that the principle of communal responsibility is applied not only with respect to bad forest protection but good protection as well in that villagers are rewarded by way of remission of an reduction in grazing fees and small free grants and so on, for assistance rendered in fire protection and conservancy.

Part of the increase in the area burnt in Central Circle is attributed indirectly to " Prohibition " now in force in West Khandesh, which is reported to have encouraged illicit distillation from *Mhowra* (*Bassia latifolia*) amongst the Bhils who find forest a suitable rendezvous for the purpose. Smoke accompanies drink and when pipes are emptied haphazardly, as is always done on the ground, a forest fire is an inevitable consequence.

Early burning tried in East Khandesh in January was not successful, the grass being far too dry with the result that more harm than good was done. Opinion is somewhat divided on the value of this form of fire protection, while the Conservator is opposed to it.

The decrease of 40 sq. miles in the area burnt in the Southern Circle is attributed to rains in November, December, February and March. Controlled early burning was done in the Sandal wood and teak pole areas of Belgaum with good results. E. D. Kanara as usual suffered the most from fires and to improve fire-protection therein additional fire-tracing of interior demarcation lines is proposed during the coming year if funds permit.

PLATE No. III

Sowings of teak on rabs (burnt patches) in felled areas of the Poona Division carried out in the rains of the year 1927.

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The following table compares the number and origin of fires for the two financial years 1926-27 and 1927-28 (*vide* appendix 59) :—

Origin	Number of fires		Area burnt in acres	
	1927-28	1926-27	1927-28	1926-27
A. Originated in departmental fire conservancy operations.	31	136	9,810	16,994
B. Crossing exterior fire lines ..	207	182	23,120	21,898
C. Accidents (persons in forest) ..	565	505	79,245	53,362
D. Intentional (do.) ..	103	134	17,746	12,714
E. Railway engines	24	22	2,392	1,577
F. Lightning	....	1	....	40
G. Causes unknown	807	964	121,680	184,988
Total ..	1,737	1,944	253,993	291,573

(*c*) *Protection from cattle.* (Forms Nos. 60 and 61.)

The forest areas open and closed to grazing were as follows :—

	Sq. miles	Per cent.
Closed to all animals for the whole year ..	1,669	11·18
Closed to all animals for part of the year ..	302	2·02
Open to all animals except browsers for the whole year.	9,355	62·66
Open to all animals except browsers for part of the year.	....	....
Open to all animals for the whole year ..	3,605	24·14
Open to all animals for part of the year ..	....	....
Total ..	14,931	

The area open to grazing was almost everywhere sufficient and closure was relaxed as usual in cases of real necessity.

The number of cattle admitted to grazing were as under :—

Circle	Horned cattle		Sheep and goats	
	1927-28	1926-27	1927-28	1926-27
Northern	664,703	644,799	126,469	123,477
Central	835,553	817,440	269,766	255,443
Southern	392,039	389,530	85,062	91,787
Sind	47,616	51,565	46,312	46,953
Total ..	1,939,911	1,903,334	527,609	517,660

Circle	Camels		Other animals		Total	
	1927-28	1926-27	1927-28	1926-27	1927-28	1926-27
Northern	..	2	1,175	1,225	792,347	769,503
Central	..	..	8,344	6,443	1,113,663	1,079,326
Southern	..	..	292	507	477,393	481,824
Sind	1,724	1,574	3,008	2,362	98,660	102,454
Total ..	1,724	1,576	12,819	10,537	2,482,063	2,433,107

There is a slight decrease in the number of cattle grazed in the Southern and Sind Circles, the decrease in the latter being attributed to (*a*) less area than last year having been irrigated and (*b*) smaller number of animals having been admitted to free grazing.

The grazing fee collected during the year amounted to Rs. 5,04,108 as compared with Rs. 5,30,691 last year, the value at full rates for the year under report being Rs. 21,91,996.

It will be observed that in spite of a greater number of cattle having grazed, the grazing revenue was less than the last year. The decrease was contributed to by all the four Circles, that in the Southern and Sind Circles being due to less number of animals having grazed, and in the Northern Circle greater number having been admitted to *free grazing*. In the Central Circle the decrease was at least partly due to a less number of cattle of professional graziers, who pay fees at full rates, having resorted to the forests and also to the non-enforcement of communal penalties in the form of enhancement of grazing fees.

In Dharwar-Bijapur Division more areas were opened to sheep and goat grazing.

With the present classification of cattle into village and non-village cattle the professional graziers whose cattle are charged at the higher rates prescribed for the non-village cattle, employ every device, sometimes successfully, to pass off their cattle as village cattle, for which lower fees are levied. With the further classification of village cattle into forest and non-forest village cattle, it must be difficult and often impossible to detect non-forest village cattle which may be temporarily quartered in forest villages in order to have them charged at the lower rates fixed for village cattle. Any system involving classification of animals according to residence and ownership, is, under the conditions prevailing in this country, bound to be defective, in that it admits of evasion on a large scale with consequent deprivation to the State of its just dues. The only real remedy lies in the abolition of all privilege rates and the levy of an uniform fee for all cattle using the forests —a measure which unfortunately hardly falls within the bounds of practical politics at the present day.

The revised grazing rules have been sanctioned by Government during the current year and will be put into force from the next grazing season.

The number of cattle impounded for unauthorised grazing in open and closed forests is given below :—

Circle	Horned cattle		Sheep and goat	
	Open	Closed	Open	Closed
Northern	1,085	21,197	11,073	3,163
Central	6,787	35,421	10,675	7,127
Southern	55	7,262	1,141	9,153
Sind	1,497	1,071	1,028	3,244
Total ..	9,424	64,951	23,917	22,687
Average for 1924-25 to 1926-27 ..	6,777	66,256	32,842	23,842

Circle	Other animals		Total		Total of open and closed	
	Open	Closed	Open	Closed	1927-28	1926-27
Northern	134	526	12,292	24,886	37,178	46,065
Central	88	203	17,550	42,754	60,304	62,876
Southern	7		1,203	16,425	17,628	17,275
Sind	51	75	2,576	4,390	6,966	7,593
Total ..	280	817	33,621	88,455	122,076	133,809
Average for 1924-25 to 1926-27 ..	245	1,416	39,864	91,514	131,378	

On the whole there is a decrease in the number of impoundings. The Southern Circle shows a small increase of 313. The decrease in the other three Circles is probably attributable to close restriction of impounding to cases of deliberate trespass and absence of herdsmen. Though the Southern Circle, on the whole shows an increase of 313, Belgaum Division shows a decrease of 578 (or 11 per cent.) reported to be mainly due to the fact that the subordinates of Nandgad and Gunji rounds in Khanapur Range have been living in an atmosphere of threats since the murder of a guard while attempting to impound cattle in 1925. This unsatisfactory state of affairs has further been accentuated by the acquittal of a man accused of assaulting a guard of the Nandgad round while attempting to impound cattle. The situation is one of those which appear to call for resort to communal penalty and is not rendered easier by the fact that the courts show a marked unwillingness to accept the evidence of a forest subordinate unless it is corroborated by independent witness or the evidence of a Panch. From the nature of the country in which the offences occur, such evidence is usually difficult or impossible to secure.

(d) Protection against injuries by natural causes

Vegetable pests.—As much cutting or uprooting of climbers, prickly pear, and Loranthus as could be done by the guards and forest contractors was so done. Similarly *trema* and *macaranga* species threatening teak and other valuable jungle wood species were cut back or eradicated. Climber cutting is only a precaution and not a cure and uprooting of these weeds in their earliest stage at the time a plantation is formed is a very desirable but costly operation.

No effort was made to eradicate lantana in the above-ghat forests of the Southern Circle because it acts as a valuable nurse to, and encourage the growth and spread of sandalwood. In Poona Division, however, lands have been given to villagers on 5-year leases on the condition that all lantana will be exterminated on that area which will then be sown with teak.

Frost was, as usual, the chief source of injury to young growth in Sind.

Animal pests.—Elephants, bison, pigs, sambhar, monkeys, nilgai, porcupines, hares and rats were responsible for the usual damage in young plantations. In Surat a small experiment of poisoning rats with barium carbonate was successful and in Thana, surrounding the plants with "Ringni"—a thorny shrub which however makes weeding an uncomfortable and expensive operation. Rats and squirrels were responsible for the wholesale destruction of mango plants in an experimental plot in Kolaba Division for growing mango as a matchwood. In S. D. Kanara porcupines, helped by crickets, destroyed in some areas as much as 95 per cent. of the plants.

Insect pests.—Teak defoliators did a good deal of damage in the early stages of the year's plantations in N. D. Kanara. Sandalwood seedlings in Patne Range were attacked by a cock-chafer grub which has been identified as "Melonthine".

CHAPTER III.

SYLVICULTURE.

1. Formation and Regeneration of Forests.

(i) General progress of areas under regeneration.

The progress of areas under artificial regeneration in Peint and the Dangs is reported as splendid. West Khandesh and Kolaba show good progress both from coppice and seed and in Belgaum and Kanara the plantations of recent years are exceedingly promising, except in some young plantations damaged by fire. In Thana, soil quality is less uniform and the results of artificial regeneration vary correspondingly. During the year under report, teak regeneration was undertaken, as usual, in both clear-felled High Forest areas and in Coppice coupes, in the latter with a view to supplement the coppice and natural seedlings. Teak is now almost invariably raised by preparation of burnt patches and dibbling

PLATE No. IV

Part of a teak plantation raised in conjunction with chillies, at the end of the first year.

PLATE No. V

Another part of the teak plantation showing at the forester's back tall grass in a part of the plantation where chillies were not grown. (Compare with Plate No. IV.)

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of seed which has been proved to be the cheapest and most effective method, the failures being restored by means of transplanting. 'Weathered' teak seed, or seed soaked and dried in alternate weeks for a period of 6 weeks has been found to give the best germination. Sowings of other valuable species like *sissum* (*Dalbergia latifolia*), *honne* (*Pterocarpus marsupium*), etc., were also carried out in some Divisions. Fire is the chief enemy of these valuable plantations and the source of constant anxiety as one hot weather season succeeds another. Fire damage can be and is to some extent rectified by cutting back the burnt stems, which involves a certain amount of otherwise avoidable expenditure. The increment of the previous year is however irretrievably lost, malformation and stem-forking are introduced and progress towards maturity arrested; while recurrence of fire in the same area renders ultimate establishment of a successful plantation impossible.

Coppice reproduction was satisfactory in all Pole and fuel forests except in some *anjan* (*Hardwickia binata*) coupes in the Dhulia Range.

In Sind 403,152 acres were inundated against 431,175 and 442,489 acres inundated during the previous two years. On irrigated areas the condition of regeneration, both natural and artificial, of the current and past years was satisfactory. Frost was responsible for a limited amount of damage to *babul* (*Acacia arabica*) plants and young seedlings.

(*ii*) *Establishment of reproduction under Working Plans or Schemes.*

(*a*) *Mainly natural*—

Regeneration of teak by coppice was satisfactory everywhere except in the above-ghat forests of Nasik where owing to deficient vitality of the parent tree growth, to scanty rain-fall and unrestricted grazing, coppice reproduction does not thrive.

The natural seedling regeneration of teak was satisfactory in the more open types of forests and those protected from fire, in the Dangs, Peint, West Khandesh (Deomogra) and fair in the teak pole areas of the Kanara, Belgaum and Dharwar-Bijapur Divisions. There is no reason why such forests, if given reasonable protection against fire and grazing, should not continue annually to produce a good crop of seedlings.

Natural seedlings of anjan though profuse in parts of the Khandesh Districts mostly died off in the hot weather. Experiments are in progress to find means of conserving and tending such seedlings to the point of establishment. These experiments have met with little success so far.

Natural regeneration of sandalwood of recent years and of the rains of 1927 is wide-spread and very flourishing in the Southern Circle sandal tract and close attention is being directed to its welfare.

In Sind, natural reproduction of *babul* (*Acacia arabica*) and *kandi* (*Prosopis spicigera*) by seed and coppice was satisfactory.

(*b*) *Mainly artificial*—

Northern Circle.—Dibblings, with restoration of failures by transplanting, were carried out on rab-beds (burnt patches) in all the exploited coupes of Panch Mahals, the Dangs, Mandvi and the 3 Thana Divisions

with the result that about 44 lakhs of plants of teak and valuable jungle-woods principally *sawar* (*Bombax malabaricum*) which is much in demand for match manufacture, were obtained. Out of these, North Thana accounts for 22½ lakhs plants in 2,994 acres or about 755 plants per acre. Babul was experimentally tried in 20 acres in West Nasik Division uplands, with fair results. Sowings in East Nasik, owing to scanty rain-fall met with little success.

Central Circle.—In Kolaba Division germination on rab-beds, of teak, *shivan* (*Gmelina arborea*), *ain* (*Terminalia tomentosa*), *hirda* (*Terminalia chebula*) and *tiwas* (*Ougenia dalbergioides*) was highly satisfactory and the work of the Divisional Forest Officer, Mr. Patkar in this connection deserves high commendation. Bamboo-planting in the exploited coupes was continued with success. Unfortunately villagers do much damage to the young bamboo-culms. A successful experiment was tried with sowing *nagli* and *wari* field crops in the exploited area excluding the burnt patches, the cultivators weeding the burnt patches. The coppice in unburnt area and seedlings in the burnt patches were thus weeded free of cost. This procedure may be tried with benefit in other Divisions also. In West Khandesh, except where weathered seed was sown, germination of teak was poor and resort was had to transplantation and stump planting on an extensive scale. The result on the whole was good. In some patches chillies and castor were planted as a protection to young teak with varying results. In North and East Khandesh, Poona and Satara, the results, considering that artificial regeneration has been introduced only lately, were fair. It is expected that, with time and experience, the artificial regeneration in these Divisions will be fully successful to the degree permitted by the not always favourable local factors. Babul sowings were successful in 3 coupes of East Khandesh. Sandal dibblings were done on a limited scale in East Khandesh and Satara and *hirda* in Poona.

Southern Circle.—In Kanara and parts of Belgaum where sowing and planting have been in force for a fairly long time artificial regeneration operations have been reduced to a successful routine. The monsoon being normal, all the exploited areas were successfully stocked with teak. These teak sowing and planting operations are for the most part carried out on clear felled areas. It is generally recognised that the formation of pure plantation of teak is silviculturally undesirable. We do not wish for a radical alteration in the character and composition of our existing forest crops but to introduce new stock and to increase the proportion of teak while maintaining a good mixture of species. It is gratifying to note that these important desiderata are of late receiving far more attention than was the case in the earlier days of introduction of the clear-felling system. In S. D. Kanara a certain amount of *honne* and *sissum* planting was done. In Dharwar-Bijapur Division teak planting was done on burnt patches in areas suitable for teak and sandal and jungle-wood species elsewhere with fair success, except in Badami and Bagalkot Ranges where *nim* (*Azadirachta indica*) was tried with little success. In W. D. Kanara, casuarina areas were extended by 12·9 acres at Arge.

PLATE No. VI

Casuarina plantation (once thinned) of the year 1922 at Chitakula (W. D. Kanara).

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Sind Circle.—16,227 acres of exploited coupes, kachas (new accretions) and blanks were sown with *babul, kandi* and *ber* (*Zizy phus jujuba*) with good results. 14,553 acres of such lands were given out for cultivation preparatory to regeneration through the agency of the cultivators themselves.

(iii) Plantations and other forms of Regeneration not under Working Plans or Schemes.

Northern Circle.—The 50-acre *simal* (*Bombax malabaricum*) plantation raised in the Panch Mahals Division in 1925-26, having proved a failure, has finally been abandoned. Experimental dibbling of *simal* in 30 acres in East Thana on 25,000 mounds 1′ high and 6′ apart at the total cost of Rs. 1,442 was carried out with the result that about 35 per cent. of the seedlings were surviving at the end of the year. Similarly in West Thana, *simal* seed was sown on 4,000 small mounds in an experimental area of 10 acres near Borivli. Transplanting on a small scale was also done. The growth of the seedlings was slow and by the end of September, they had put on two sets of leaves, and an average height of 4″. Many of the seedlings have since died. Also 1,800 *simal* sticks were put in of which 400 were alive in the monsoon. The whole lot have since died. In West Nasik, teak planting was done in 3,291 acres clear-felled in anticipation of new Working Plan which has since been approved by the Chief Conservator.

Central Circle.—Thirty-three plots in West Khandesh and 51 acres in Poona Division were treated under agri-cum-forestry system. Mango-plantation for production of matchwood was continued in Kolaba but, out of 17,600 seedlings originally raised, only 1,800 seedlings hidden under thorny bushes escaped the attention of wild pig a result similar to that obtained last year. It is practically certain that in the absence of pig-proof fencing and attendant prohibitive expense, it is useless to persevere with such plantations on any considerable scale.

Southern Circle.—Teak seed was sown in E. D. Kanara on the sites of burnt bamboo clumps near Kannigeri and Chipgeri with excellentt results. In S. D. Kanara, 628 acres of inferior forest were clear-felled and regenerated with teak supplemented by *sissum* and *honne*. The results would have been first class but for the serious damage done by porcupines and crickets, in spite of which, however, the results are still fair. In C. D. Kanara nurseries of plants of fodder species and casuarina were maintained for distribution of seedlings to villagers. Sandal regeneration was attempted with fair success in lantana areas of E. D. and S. D. Kanara, Dharwar, Bijapur and Belgaum. Concentrated regeneration of sandal was attempted in 40 acres in Belgaum Division by means of dibbling and broad-cast sowing. 1,200 plants were surviving at the end of the hot season.

Sind Circle.—No new *tali* (*Dalbergia sissoo*) plantation was undertaken during the year. About 2,500 maunds of seed (*babul, kandi*, etc.), were sown broad-cast in 11,312 acres of new accretions, blanks, erosion strips, etc.

Throughout the Presidency, Rs. 24,540 were spent on regeneration work outside the prescriptions of the Working Plans in force and 12,607 acres were thus dealt with, with varying degrees of success.

(iv) Tending.

Weeding, cleaning, mulching and cutting back of mal-formed stems and stems of inferior species interfering with teak or valuable jungle-woods were carried out as usual. The benefits of these operations are now thoroughly appreciated by the staff who spare no pains to supply to the plantations the maximum tending permitted by the funds available.

(v) General.

The monsoon being normal, the results of the year were all that could be desired except in some Divisions like Panch Mahals, East Nasik, East and North Khandesh, Poona and Satara, where due to such factors as scanty rain-fall, poor soil and the staff being new to the work, they were less satisfactory. With time and as more experience is gained by the subordinates, cultural operations in these Divisions also will attain a higher degree of success.

Artificial regeneration is making rapid progress and with the increased activity in the formation and tending of plantations and the concentrated attention now being bestowed upon the young growth of such valuable woods as teak and sandal, the value of our forests is correspondingly increasing. Provided only that such work is carried on in future with equal ardour, it may be safely predicted that in about 50 years' time, our forests will yield twice the handsome revenue we are getting now.

2. TENDING OF THE GROWING STOCK.

Improvement fellings were carried out in the Dangs, West Khandesh, Belgaum and Kanara. Thinnings were carried out in 276 coupes of the three Thana Divisions and in babul areas of Poona Division resulting in net revenue of Rs. 18,277 and Rs. 13,152 respectively. In Kolaba Division thinnings were carried out in 135 coupes with 44 coupes still in arrears. These thinnings were not in themselves paying, but are indirectly so, and being silviculturally essential, they have to be done. Thinnings were also carried out in the Kanara teak pole coupes and young plantations. In Sind, handsome annual revenue (during the year under report the nett revenue was Rs. 55,385) accrues to Government from intermediate fellings among crops artificially raised in Sind from 1912-13 onwards, prior to which year practically no such work worth the name had ever been done.

CHAPTER IV.

EXPLOITATION.

(*a*) SYSTEMS OF MANAGEMENT.

(*i*) *Major forest produce.* (Form No. 63.)

Form No. 55B (*vide* Volume II of this Report) shows the areas in which the various systems are in force.

PLATE No. VII

Unthinned babul (Acacia arabica) above flood level at Panavli (Poona Division). Girth of dominant trees varies between 12″ and 18″.

PLATE No. VIII

The same as Plate No. VII, after thinnings.

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Clear fellings.—Were carried out in the Panch Mahals (with very limited reservation of young trees of a few valuable species), the greater part of the Dangs, Bulsar-Chikhli and Thana forests in the Northern Circle; Nawapur-Nandurbar and Kolaba forests in the Central Circle; teak pole forests of N. D. Kanara and Belgaum Division, areas selected for regeneration in the high forests of Kanara and Belgaum, annual coupes of the Ankola-Kumta and Honavar-Bhatkal provisional plan in the Southern Circle; in the Sind forests; in the babul forests of East Nasik, East Khandesh, Poona and Dharwar-Bijapur Divisions, and in the casuarina plantations.

Coppice with standards.—In the forests of Iaatpuri, above-ghat parts of Nasik and Dindori ranges, Satpuda forests, in the anjan forests of East Khandesh Division, in the teak and evergreen forests of Poona and Satara Divisions (excepting Mahableshwar Range) and parts of Belgaum and Dharwar-Bijapur Divisions.

Improvement fellings.—Were carried out in Mandvi forests, Baragaon Dangs, parts of Surat Dangs, in some coupes of the North and West Khandesh Divisions, Mahableshwar and Matheran Ranges in Satara and Kolaba Divisions, scrub forests of East Khandesh Division and over large areas in the high forests of Kanara and Belgaum.

Selection fellings.—Were carried out in the Dangs Protected forests, 6 coupes in Block I of the Working Circle I of the Satmala Plan, and in some high forests of Kanara.

Simple coppice fellings.—In the fuel coupes in Kanara and Belgaum Divisions, teak pole areas of Dharwar and Kod Ranges and scrub forests of Bijapur District.

Unregulated fellings.—Include fellings of dead and dying sandalwood, trees in lands given out for cultivation, clearing of grazing grounds in E. D. Kanara, concession fellings of match-wood species, cutting of dead and wind-fallen trees and trees in erosion strips in Sind, felling of royalty trees in Malki lands and reserved trees in Revenue waste lands and small fellings for free grants on permits, etc.

(*ii*) *Minor forest produce.* (Form No. 64.)

As usual minor produce was mainly farmed out or sold on permits.

About 75 lakhs lbs. of famine grass were stored at Godhra, Dohad and Palghar under the Famine Fodder Scheme at the expense of famine funds, bringing the amount stored at these depôts to 228 lakhs lbs. At Godhra the year's supply being in excess of the available accommodation, a small shed had to be constructed at the end of the year. Similar sheds will have to be constructed at Godhra and Dohad, in case no grass is disposed of, to accommodate the supply of the next two years, after which the agreement expires. There was no demand for famine grass during the year except at Palghar where 5·70 lakhs lbs. of grass were disposed of.

About 123 khandies of *hirda* were collected departmentally in the Poona Division and sold at Rs. 63 per khandi as against Rs. 56 last year,

net total profit being Rs. 5,951. Arrear rent of the last five years, of Rs. 1,64,356 was recovered for the first time from the Military Department on account of the grass kurans held by them. The annual revenue from this source will henceforward not exceed about Rs. 30,000 and may not reach this figure.

Lac was collected departmentally in Hyderabad Division on a small scale, the operation resulting in a net profit of Rs. 554

(*b*) Agency of Exploitation.

(*i*) *Departmental Agency.*

The following is a comparative statement of Major and Minor Produce extracted departmentally during the two years 1927-28 and 1926-27 :—

Circle	Year	Major Forest Produce			
		Timber c.ft. in thousands	Fuel c.ft. in thousands	Total c.ft. in thousands	Sandalwood value
					Rs.
Northern ..	1927-28 ..	442	486	928	....
	1926-27 ..	462	616	1,078	....
Central ..	1927-28 ..	10	683	693	3,972
	1926-27 ..	12	490	502	2,505
Southern ..	1927-28 ..	922	202	1,124	1,80,875
	1926-27 ..	869	26	895	1,17,584
Sind ..	1927-28 ..	53	2,223	2,276	....
	1926-27 ..	49	2,114	2,163	....
Total ..	1927-28 ..	1,427	3,594	5,021	1,84,847
	1926-27 ..	1,392	3,246	4,638	1,20,089
Difference ..	....	+35	+348	+383	+64,758
Percentage of total outturn from all sources.	....	26	8	10	100

Circle	Year	Minor Forest Produce			
		Bamboos value	Grass and grazing value	Other value	Total value
		Rs.	Rs.	Rs.	Rs.
Northern ..	1927-28 ..	....	7,095	258	7,353
	1926-27 ..	75	6,959	219	7,253
Central ..	1927-28 ..	98	....	7,768	7,866
	1926-27 ..	....	....	6,687	6,687
Southern ..	1927-28 ..	....	....	63	63
	1926-27 ..	....	....	42	42
Sind ..	1927-28 ..	....	....	2,067	2,067
	1926-27 ..	....	....	6,090	6,090
Total ..	1927-28 ..	98	7,095	10,156	17,349
	1926-27 ..	75	6,959	13,038	20,072
Difference ..	....	+23	+136	−2,882	−2,723
Percentage of total outturn from all sources.	....	....	·5	4	1

In the Northern Circle, the decrease both under timber and fuel was partly due to a smaller number of coupes having been departmentally thinned in North and East Thana Divisions.

The increase under fuel in the Central Circle was chiefly due to the coupes in Kolaba Division having been thinned departmentally. The increase in the value of minor produce was due to the higher rate obtained for hirda in the Poona Division.

In the Southern Circle, the increase under timber and fuel was due to a large number of works in E. D., S. D. and C. D. Kanara and to the departmental working of the fuel depôts in W. D. Kanara for want of contractors. The greater quantity of sandal, extracted and better prices obtained therefor accounts for the increase of revenue under sandalwood.

In the Sind Circle, the increase under timber was due to a greater demand for babul timber from Gilder and Company of Bombay and Jubbulpore Gun-Carriage Factory; that under fuel was due to greater activity in the departmental operations. The decrease under minor produce was due to low prices.

Timber Depôts.—The prices obtained for teak at the sale depôts in the Northern and Southern Circles were satisfactory. There was a marked drop in the demand for other hardwoods at inland depôts and for *sissum* at coast depôts in the Southern Circle.

Firewood depôts.—All the depôts in the Northern Circle were worked by contractors. In the Central Circle the depôts at Matheran and Mahableshwar were worked departmentally and that at Panchgani was worked by a contractor. All the firewood depôts in the Kanara District, excepting Karwar, Sadashivgad and Majali, to work which no contractor was forthcoming, were worked by contractors.

Mechanical extraction and transport of timber and Government saw mills.—Report on these items will be found in Chapter IV-A.

Private saw mills.—Mr. Mantri's mill at Gunjawati remained idle. Sayad Nasroddin's mill at Hanmapur turned out 3,845 sleepers—an improvement on the last year's outturn—but still a very poor result for which bad organization, sickness and irregular payment of salaries to the mill-staff are reported to be the contributory causes.

Cart Depôts.—The strength of the Kirwatti Cart Depôt, now the only Cart Depôt in existence, was reduced in November 1927 from 12 to 6 carts as this number was considered sufficient to help with the transport of touring officers' kit and in connection with departmental timber and road works. This arrangement resulted in a profit of Rs. 708 during the year under report as compared with a loss of Rs. 826 during the previous year.

Messrs. Howard Brothers' Timber Agency.—The account with this firm to the and of the financial year is given in the statement below :—

Description of timber	Receipts	Disposals	Balance in stock	Sale Proceeds
1	2	3	4	5
	C.ft.	C.ft.	C.ft.	£ s. d.
Teak	22,616	14,121	*8,495	
Matti	11,419	9,666	1,753	
Blackwood or Rosewood ..	T. c. q. lbs. 29 4 3 3	T. c. q. lbs. 29 4 3 3	....	11,521 16 6
Honne	76 cft.	....	76 cft.	
Total ..	34,111 T. c. q. lb. 29 4 3 3	23,787 T. c. q. lbs. 29 4 3 3	10,324	11,521 16 6

Description of timber	All charges on sales	Other charges freight, Prime charges, etc.	Net proceeds	Remarks
	6	7	8	9
	£ s. d.	£ s. d.	£ s. d.	
Teak				*Balance of teak has been sold in April 1928, *i.e.*, after the close of the year.
Matti	1,838 9 0	6,706 2 1	†2,977 5 5	
Blackwood or Rosewood ..				†Of this £1,880 have been received.
Honne				
Total ..	1,838 9 0	6,706 2 1	2,977 5 5	

(*ii*) *Purchasers.*

The following table compares the outturn of major and minor produce removed by consumers and purchasers during the year 1927-28 and 1926-27 :—

Circle	Year	Major Forest Produce				
		Timber		Fuel		Sandal-wood
		Cft. in thousands	Value	Cft. in thousands	Value	Value
			Rs.		Rs.	Rs.
Northern ..	1927-28 ..	2,019	16,26,250	5,765	25,440	2
	1926-27 ..	2,222	18,03,682	5,512	42,062	61
Central ..	1927-28 ..	627	2,87,307	4,579	62,883	..
	1926-27 ..	586	2,84,516	4,844	55,519	..
Southern ..	1927-28 ..	956	2,48,142	6,372	2,05,551	..
	1926-27 ..	853	3,16,940	6,832	2,02,904	..
Sind ..	1927-28 ..	131	82,382	16,046	3,25,432	..
	1926-27 ..	105	82,722	19,415	3,72,765	..
Total ..	1927-28 ..	3,733	22,44,081	32,762	6,19,306	2
	1926-27 ..	3,766	24,87,860	36,603	6,73,250	61
Difference ..	....	−33	−2,43,779	−3,841	−53,944	−59

PLATE No. IX

Teak plantation ten years old at Ganeshgudi in the Kanara Eastern Division. Thinned in January 1927, *i.e.*, in the ninth year.

LIBRARY OF THE ROYAL ASIATIC SOCIETY. BOMBAY BRANCH

PLATE No. X

Sawing sleepers by hand in the forest.

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Circle	Year	Minor Forest Produce			
		Bamboos Value	Grass and grazing Value	Other minor produce Value	Total Value
		Rs.	Rs.	Rs.	Rs.
Northern ..	1927-28 ..	59,552	1,24,768	45,786	2,30,106
	1926-27 ..	45,250	1,32,776	54,679	2,32,705
Central ..	1927-28 ..	11,897	6,00,776	53,949	6,66,622
	1926-27 ..	13,114	5,07,950	67,608	5,88,672
Southern ..	1927-28 ..	74,627	88,243	61,885	2,24,755
	1926-27 ..	81,802	88,177	62,082	2,32,061
Sind ..	1927-28 ..	....	38,767	34,578	73,345
	1926-27 ..	....	39,663	37,690	77,353
Total ..	1927-28 ..	1,46,076	8,52,554	1,96,198	11,94,828
	1926-27 ..	1,40,166	7,68,566	2,22,059	11,30,791
Difference ..	..	+5,910	+83,988	−25,861	+64,037

In the Northern Circle the drop in the value of timber is chiefly due to a general slump in the timber market, and to a slight extent to the system newly introduced in the Panch Mahals, of recovering the price of the coupe material before it is allowed to be removed, in place of the long standing custom of permitting removal on a security being furnished for the remaining ¾ths of the price of the coupes. This latter system was frequently abused by the contractors who often neglected to pay their dues within the prescribed time, thus resulting in large arrears and difficulty of recovery. It is expected that the prices in Panch Mahals will be adversely affected for some time till the contractors are used to the new system. The increase in revenue from bamboos is due to the demand created by the floods. The fall in the value of grass is attributed to good growth of grass in private lands and the consequent reduced demand for grass available in the forests. The fall in the value of minor forest produce is due to the revenue from *Timru* leaves in Panch Mahals Division and Rosha grass in Surat and East Nasik Divisions not having been received during the year.

In the Central Circle, the decrease in the revenue from timber in Poona, Satara and Kolaba Divisions, due chiefly to slump in the market and partly to less demand for royalty trees, was more than counterbalanced by the increase in the outturn of timber and its value caused by the sale of revenue waste numbers in West Khandesh Division. The increase in the value of fuel is attributed to better prices obtained for fuel coupes in East Khandesh Division. The decrease under bamboos was due to reduced demand in certain Divisions. The recovery of arrear rent for grass kurans from the Military authorities in Poona Division has wiped out the deficit, in all Divisions, in revenue from grass and grazing. Reduced demand for *anjan* leaves in East Khandesh Division and non-recovery of the price of *rosha* grass during the year account for decrease under "other minor forest produce."

In the Southern Circle, the slight increase in the outturn of timber without a corresponding increase under value was in N. D., S. D. and C. D. Kanara, and Dharwar-Bijapur due to the extraction of material from compartments sold to contractors in previous years and due to poor prices received for teak pole coupes and for series XIX-23 Nagargali. The decrease in outturn under fuel is due to incomplete cutting, by the purchasers, of fuel coupes, owing to slack demand for the material; while the increase under value was almost entirely due to the sale of the Khanapur fuel coupes which had been withheld from sale in the previous year. The decrease under bamboos was due to decreased demand. The small decrease under "other minor forest produce" was due to the fall in the price of Manganese, which reacted unfavourably on the quantity of the ore extracted.

In Sind, the decrease in the value of fuel was due to a decrease in demand from outside Sind with the result that some coupes in Hyderabad and Shikarpur Divisions remained unsold. The decrease under minor produce was due to low prices obtained for lac, *babul* pods and kana sur contracts owing to reduction of irrigated area.

(*iii*) *Rights, Privileges and Free Grants.*

The following is a comparative table of the quantity and value of forest produce removed by right and privilege holders and free grantees during the year 1926-27 and 1927-28 :—

Circle	Agency	Major Forest Produce			
		Timber		Fuel	
		Cft. in thousands	Value	Cft. in thousands	Value
			Rs.		Rs.
Northern	C	....	....	5,427	1,39,424
	F	12	12,244	....	....
Central	C	....	....	1,841	1,28,528
	F	11	4,490	17	729
Southern	C	300	72,000	3,000	37,500
	F	34	9,689	12	96
Sind	C	....	....	11	165
	F	22	1,781	2	53
Total, 1927-28 ..	C	300	72,000	10,279	3,05,617
	F	79	28,204	31	878
Total, 1926-27 ..	C	301	72,271	10,224	2,32,972
	F	73	16,549	82	1 097

C = Concessionists. F = Free Grantees.

Circle	Minor Forest Produce				
	Agency	Bamboos Value	Grass and grazing Value	Other minor produce Value	Total Value
		Rs.	Rs.	Rs.	Rs.
Northern ..	C	4,812	3,09,206	11,990	3,26,008
	F	353	....	215	568
Central	C	207	92,646	3,624	96,477
	F	2,245	126	4,061	6,432
Southern	C	45,000	2,84,339	20,000	3,49,339
	F	173	20,282	1,511	21,966
Sind	C	....	3,810	....	3,810
	F	....	5,342	10	5,352
Total, 1927-28 ..	C	50,019	6,90,001	35,614	7,75,634
	F	2,771	25,750	5,797	34,318
Total, 1926-27 ..	C	52,143	5,68,069	39,027	6,59,239
	F	507	32,378	3,179	36,084

C = Concessionists. F = Free Grantees.

There are no rights except those of way. The privileges conceded to the villagers under settlements and other Government orders were exercised by them as usual in all Circles. Free grants of timber and other forest produce were given, in deserving cases, for construction and repair of dwellings, for hutting and other household and agricultural purposes.

(c) Outturn and Sources of Forest Produce.

The outturn from all sources of forest produce during the two years 1927-28 and 1926-27 compares as follows :—

Circle	Year	Major Forest Produce		
		Timber Cft. in thousands	Fuel Cft. in thousands	Sandal-wood
				Rs.
Northern	1927-28	2,473	11,678	2
	1926-27	2,688	11,616	61
Central	1927-28	648	7,120	3,972
	1926-27	606	7,126	2,505
Southern	1927-28	2,212	9,586	1,80,875
	1926-27	2,041	9,873	1,17,584
Sind	1927-28	206	18,282	....
	1926-27	197	21,539	....
Total ..	1927-28	5,539	46,666	1,84,849
	1926-27	5,532	50,155	1,20,150
Difference ..		+7	−3,489	+64,699

Circle	Year	Minor Forest Produce		
		Bamboos	Grass and grazing	Other minor produce
		Rs.	Rs.	Rs.
Northern	1927-28	64,717	4,41,069	58,249
	1926-27	52,587	3,48,494	71,124
Central	1927-28	14,447	6,93,548	69,402
	1926-27	13,334	5,79,097	79,139
Southern	1927-28	1,90,800	3,92,864	83,459
	1926-27	1,26,970	3,97,571	83,220
Sind	1927-28	....	47,919	36,655
	1926-27	....	50,830	43,820
Total ..	1927-28	1,98,964	15,75,400	2,47,765
	1926-27	1,92,891	13,75,992	2,77,303
Difference ..		+6,073	+1,99,408	−29,538

Of 2,482,063 animals admitted to grazing in the forests, 557,995 were allowed free. Corresponding numbers for the last year are 2,433,107 and 540,633.

The total expenditure on management of State forests was :—

Circle	1927-28	1926-27
	Rs.	Rs.
Northern	5,08,164	5,01,122
Central	1,12,977	95,942
Southern	11,09,480	10,72,386
Sind	98,441	1,07,588
Total ..	18,29,062	17,77,038

The increase was due to more expenditure on roads and buildings in the Northern and Central Circles and on departmental exploitation in the Southern Circle.

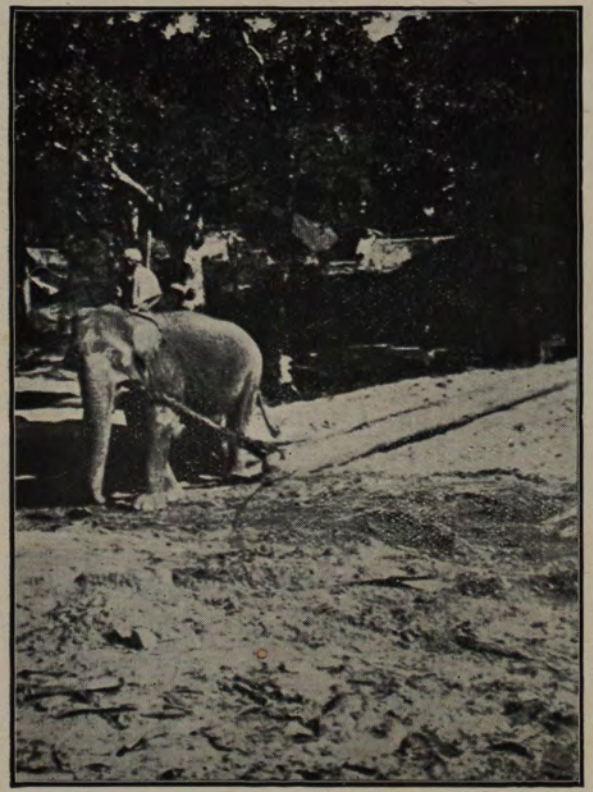
CHAPTER IV-A.

THE ENGINEERING BRANCH.

The work of the Engineering Branch during the year comprised the following :—

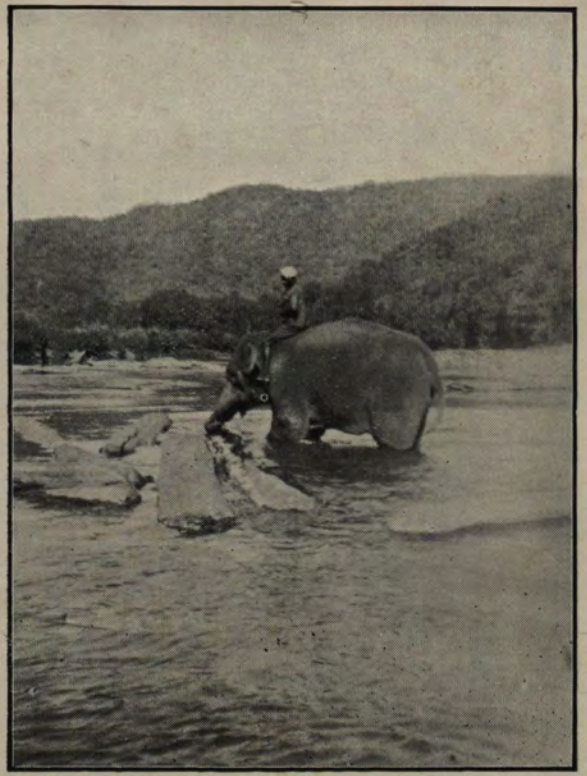
(1) Surveys, (2) Design and Drawing Office work, (3) Road and Bridge construction, (4) Mechanical Transport, (5) Timber extraction from stump by mechanical means and (6) Saw Mills.

PLATE No. XI



Elephant hauling logs to the river side (Kalinadi) below Ganeshgudi in the Kanara Eastern Division.

PLATE No. XII



Elephant arranging logs in position for floating on the Kalinadi in the Kanara Eastern Division.

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Much useful work was accomplished in connection with new road and bridge work mainly in the Northern and Southern Circles, involving survey, plotting, preparation of plans and estimates and actual construction.

(*a*) Mechanical Transport.

The Department made use of two outfits during the year, the Foden Steam Engine and the Super Sentinel with their trailers. The former worked on log transport between Bomanhalli and Dandeli from 1st to 19th March 1927 only when a serious accident put it out of action. After repairs this tractor was employed as a portable saw mill, for which purpose it promises to be extremely useful and efficient, this form of plant having long been badly needed for conversion of timber on the site of, or adjacent to, felling areas remote from railhead.

The Super Sentinel was employed on log transport of timber *ex* the Nagzhari Valley between Kulgi and Dandeli from 1st to 7th May 1927 and again from 4th March to 25th April 1928 when personnel connected with its running was dispensed with.

Experience has shown the running and upkeep of these tractors on log haulage to be a costly business which the situation in Kanara as regards transport generally does not now justify. The running cost of such transport is much higher than prevailing cart rates and there is no lack of carts. Apart from this, mechanical breakdowns are frequent, competent drivers and mechanics are not obtainable for work in remote jungles and the plant is from one cause or another subjected to long periods of idleness. On all these grounds it is unnecessary and inadvisable to continue tractor road haulage and it has been decided to sell the Super Sentinel, the Foden being kept on as a portable mill engine.

(*b*) Mechanical Extraction.

The following remarks are in the main an excerpt from the year's report submitted by the Officer (Mr. T. K. Mirchandani) in chagre of the Engineering Branch :

Fordson Outfits.

General.—The following report covers the period from 1st November 1927 to 30th May 1928. The work during this period was carried out on the same lines as previous years, and further experience obtained in long distance hauling and relay hauling dealt with later on.

The two Fordson skidding outfits worked in the Nagzhari Valley. The second outfit worked only for a short period as the total output has been limited to 6,500 khandis with a view to maintaining a sustained annual yield from the Nagzhari Valley. One buffalo Winch worked in the Nagzhari Valley while the other worked on the Kaneri River slopes of Gund Range.

The total output compares favourably with the output for the previous years. The following table gives the total quantity of timber in tons hauled during the year as compared to last year :—

Fordson Outfits				Buffalo Winch at Nagzhari		Buffalo Winch at Gund	
1927-1928			1926-27	1927-28	1926-27	1927-28	1926-27
Outfit No. 1.	Outfit No. 2.	Total	Total				
488	771	1,259	849	371	424	354	176

Ordinary Hauling.—The Fordson Outfit No. II worked from 2nd November 1927 to 31st May 1928 excepting on Sundays and holidays. No mechanical breakdown occurred during the above period.

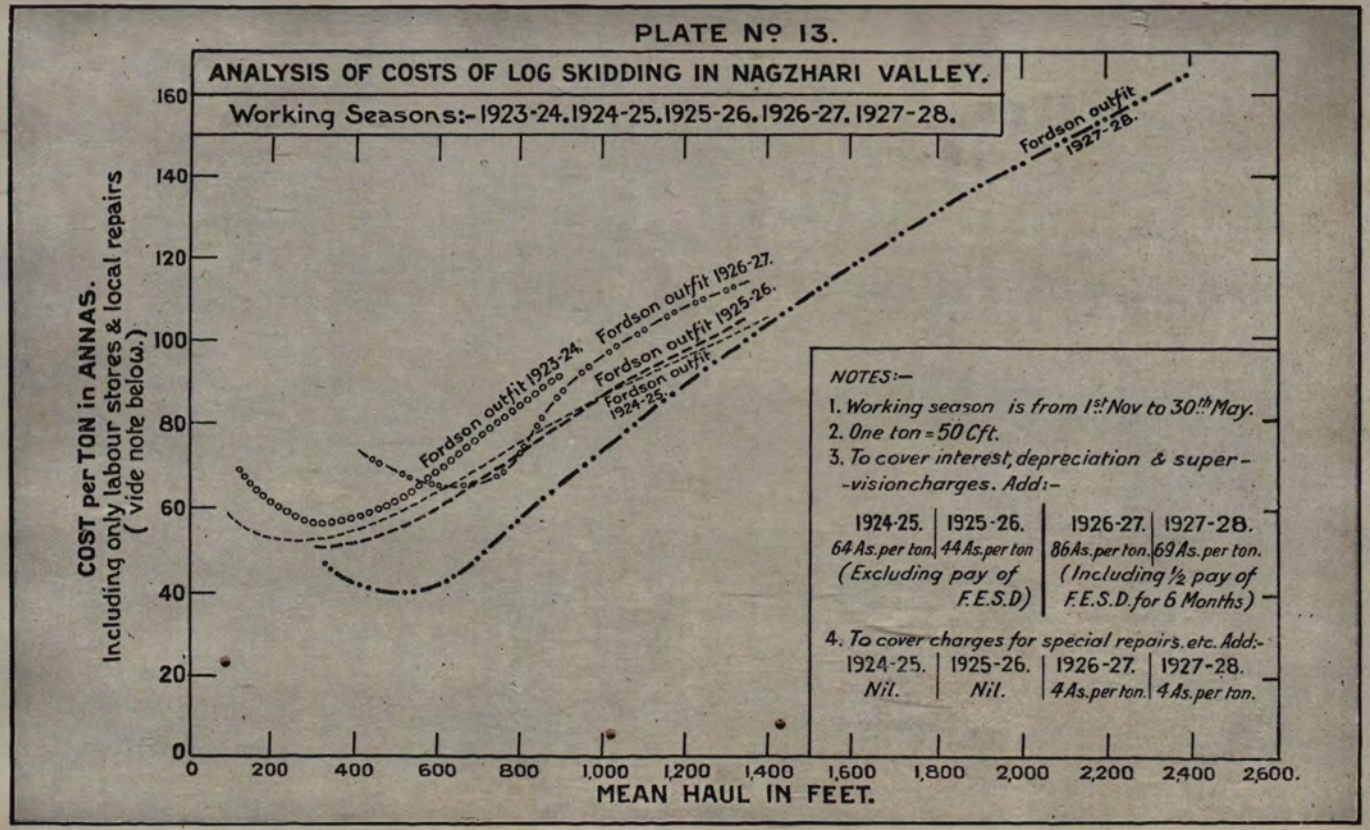
The Outfit No. I started work on 18th November 1927 and closed on 7th February 1928 as there was no work for it due to the limiting of the total annual yield from Nagzhari slopes.

All logs in compartment 23 were extracted and a portion of compartment 24 was worked. Owing to the scattered nature of work in compartment 23 (some of the logs having been overlooked in ravines in previous years), the working costs are slightly higher than they should have been, although they compare very favourably with the last year's costs. Plate No. 13 shows graphically at a glance the working costs per ton from the year 1923-24 to the year 1927-28 for various lengths of haul.

The average cost per ton for hauls up to 2,000 feet (*i.e.*, for ordinary hauling) if only Outfit No. II is considered works out to Rs. 9-8-9 per ton including interest and depreciation on the capital, and cost for the slack season. But taking into account the work done by both outfits the average working costs per ton including all charges work out to Rs. 8-14-0 per ton, delivered on the top of the Nagzhari left bank ridge. The corresponding charge for the last year worked out to Rs. 11-10-6 per ton.

Long Hauling.—The last year's long hauling experiment in compartment 25 which was closed, half finished, on account of a mechanical breakdown and subsequent rains, was completed, and all timber hauled and brought up to the ridge. This was done during the first fortnight of November. Thereafter the outfits worked on ordinary hauling in compartments 23 and 24. The long hauling work was again taken up in compartment 23 on 23rd March 1928 and completed by 31st May 1928. The longest haul dealt with was 2,700 feet. All this work was done with one outfit, the other outfit (Outfit No. I) being kept ready in reserve in case of any mechanical breakdown. The range of hauls tackled in this year's long-haul experiments is not really very great. Longer hauls up to 4,500 feet or more are likely to be met with in future years' working in compartments 24 and 25. The question whether in such cases extraction

PLATE Nº 13.



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by relay hauling will be cheaper than extraction partly by road and partly by skidding will be affected to a certain extent by the quantity of timber accessible to any practicable road and will be decided on the merits of each case.

The total output of long haul work is 188 tons and the working costs including all charges work out at Rs. 21-12-0 per ton.

Buffalo Winch at Kulgi.—The Winch worked from 16th November 1927 to 29th February 1928. It skidded 371 tons of timber the average length of haul being 708 feet. The working costs including all charges work out at Rs. 10-8-9 per ton as compared to Rs. 11-4-6 per ton for the last year.

Buffalo Winch at Gund.—This Winch started work on 30th October 1927 and closed on 2nd June 1928, the total number of working days being 153. The Ranger in charge being rather inexperienced (and partly due to the fact that this work is situated in rather an out-of-the-way place and therefore the Forest Engineer cannot look after it from day to day as he does in the case of Nagzhari Valley equipments) there was a mechanical breakdown due to the crushing of the inside metal of the boss of the brake-drum which jammed the drum tight on the shaft. The work however did not suffer as a small winch in stock in the Stores at Dandeli was issued for use while the damaged winch was repaired at Dandeli and returned to Gund.

The total number of tons hauled being 354 and the total costs including all charges work out to Rs. 12-2-3 per ton as compared to Rs. 15-10-6 per ton last year the average length of haul this year being 908′ against 484′ last year.

General.—There was no serious mechanical breakdown of any of the outfits. This is mainly due to the fact that both Fordson Tractors and all the Winches were completely overhauled during rains of 1927-28. The cylinder blocks of tractors had to be sent to Bombay to Fords Workshops for pouring in fresh metal in the main bearings. This accounts for the comparatively heavy repairs charges per ton.

There was some discontent among the labour, which was alleviated by the sanction of full wages for Sundays and holidays.

One serious accident resulting in the death of one woman signaller, occurred during the period under report. The matter was reported to the Commissioner under Workmen's Compensation Act and the necessary compensation granted to the heirs of the deceased.

The Kulgi Buffalo Winch worked in charge of a Forester under the immediate control of the Sub-Divisional Forest Officer, Nagzhari Exploitation.

The Winch at Gund worked under the immediate control of the Ranger and a Maistry.

(c) Saw Mills.

The greater part of the Forest Engineer's report on the working of mills for the year is reproduced below:

General.—Improved methods of working introduced and extended by the Forest Engineering Branch have resulted in gradually increasing output and reduced conversion costs as shown by the following figures:—

Year	Total output of sawn material in c. ft.	Sawing cost per c. ft.
1922-1923	160,000	Data not collected.
1923-1924	266,000	
1924-1925	313,000	As. 7·7
1925-1926	308,500	6·12
1926-1927	388,659	5·82
1927-1928	417,480	4·98

Note.—For details, see the table A under "Output and conversion costs."

The objects kept in view have been mainly the following:—

(*a*) Maintenance of the machines, gear and equipment in good repair and in working order and improvement of the same wherever practicable.

(*b*) Arranging timely supply of stores which have been found by experience the most suitable consistent with efficiency and economy.

(*c*) Checking consumption of stores with a view to reducing conversion costs.

(*d*) Collecting complete data as a basis for future improvements. This work done in detail has been of great value in detecting sources of inefficiency, waste, etc.

(*e*) Maintaining copies of registers of dead stock of all the mills in the office of the Forest Engineer to facilitate transfer of special tools, thus reducing the purchases of special and expensive tools required from time to time for effecting special repairs. This would not be possible without a central agency of control.

(*f*) Instructing the establishment in systematic and correct methods of work in the mill, etc.

Dead stock.—The value of dead stock added to various mills during the year is:—

	Rs.
(*a*) Mill gearing, etc.	2,151
(*b*) Two auto-sharpening machines	907
Total ..	3,058

Stores.—All articles of stores have since the introduction of the Forest Engineering Branch been standardised. This standardization is based on past experience and tests on stores carried out in the mills. Important items of stores are purchased through the Chief Controller of Stores, Indian Stores Department, and distributed to the various mills from time to time from the Central Stores at Dandeli. Petty stores and items required in emergency are purchased locally.

In each mill accurate accounts of receipts and issues of stores are maintained and periodically checked under the supervision of the Forest Engineer. Any abnormal consumption of stores is speedily enquired into. The result of such detailed supervision has been of great advantage in many cases, *e.g.*, the abnormal consumption of lubricating oil in Dandeli mill during the last two years was found on enquiry to be partly due to defective design of bearings with the result that a new type of self-oiling bearings which are calculated to effect the desired improvement have been purchased for this mill. As a result of comprehensive tests carried out in our mills, the Beardshaw Sawblades of 42" diameter and under were found to be as good as more costly blades of other makes. The use of these sawblades resulted in a saving of about Rs. 2,000 during 1927-1928.

The Forest Engineer keeps in touch with the cheapest market and is in a position to take advantage of any new and improved quality of stores put on the market from time to time. Both the dead stock and the consumable mill stores are stocked in the stores room of each mill systematically and in order. The value of stores issued to the various mills during the year amounted to Rs. 31,562.

Saw Mills.—At the end of the year one small portable mill called Foden Portable Saw Mill was added in N. D. Kanara. Separate accounts are to be maintained for this mill from the year 1928-29. The American Log Mill at Dandeli was closed down for part of the year for want of work for it.

Special Repairs.—All machines and engines have been maintained in order. Most of the petty repairs work was carried out in the workshop at Dandeli. This workshop requires improvement and extension. For economic working it is essential that this Department should be independent of outside help for all ordinary repairs.

Several alterations and improvement have been carried out in machinery and gearing. The following special repairs were effected :

Dandeli Mill.—There was a serious accident to the Robey Engine due to the negligence of the driver resulting in the breaking of the piston and cracking of the C. I. Liner of the Cylinder block. The work of repair required great skill and was carried out satisfactorily by the Works Manager, M. &. S. M. Railway at Hubli in the Railway Workshops. Special repairs necessitating oxy-acetylene welding of the shell plate of

Ransome Simm's Jefferies boiler were carried out and overhaul of the Fowler Loco was undertaken during the year.

Bomanhalli Mill.—The Engine of this mill requires overhaul and renewal of bearings. The new bearings ordered out from the manufacturers in Europe were not received during the period under report. The tops of the tables of the two 42" benches of this mill are unevenly worn. Arrangements were made to have them skinned with a planning machine at Hubli Railway Workshop, but the benches could not be spared. It is proposed to overhaul the Engine of this Mill and use it for driving the Kirwatti Mill as the engine of the latter Mill is not powerful enough to take the heavier load expected when the layout of that mill is revised at the time of erection of the Log Mill.

Kirwatti Mill.—Except for supplying a new strap and cotter for the connecting rod no repairs were carried out.

Badgi Mill.—The broken spindle of bench No. 2 was renewed and new brasses were fitted to this bench. The bracket supporting the guide pulley spindles of saw sharpening machine was also renewed during the year.

Haste Mill.—Special bearings for emery wheel spindle of saw sharpening machine were designed and fitted. They are functioning properly. The speed of the emery wheel was not correct. This was adjusted with a pulley of suitable diameter. The bracket supporting the guide pulleys of this machine also was renewed during the year. New bearings were fitted to Bench No. I of this mill.

Chikhalda Mill.—The C. I. cover of the overhead pendulum cross-cut saw was broken and was repaired locally. The guide pulleys and the driven pulley of the auto-sharpener were replaced by pulleys of slightly greater width. This arrangement gives greater friction for the drive and reduces tension in belt. This is functioning properly.

The speed of the log mill was increased to its proper peripheral speed for 54" diameter saws by substitution of pulleys of suitable diameter.

Hand cross-cut saws.—An improved pattern of vice manufactured at the Dandeli mill was supplied to all the mills with a view to improve saw sharpening which has not been receiving the attention it deserves at the hands of the subordinates. Close attention is also paid to such details as keeping the raker teeth below the cutting teeth and other working methods calculated to improve the efficiency of these saws.

Timber seasoning and stacking.—The saw mills in Southern Circle are provided with seasoning sheds. In the Northern Circle the saw mill at Haste is provided with a new seasoning shed and those at Badgi and Chikhalda with temporary storage sheds.

Organization.—So far as Establishment and Stores are concerned, considering the local conditions, the costs have been kept down to the

Forest Saw Mill at Bomanhalli (N. D. Kanara).

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minimum. It is recognised that in the future the establishment charges are likely to rise due to the difficulty of getting properly trained men to stay in the out-of-the-way and malarious localities where our mills are situated. The daily labour rate has also a tendency to rise from year to year, therefore it is essential that the number of labour units employed in our mills should be reduced to the minimum, which in other words means that each individual should turn out more work than he does at present. This is possible with better organization of labour in the mill and by adoption of labour saving devices like tramways, trolley-feeds and automatic feeds, etc.

Chikhalda mill is likely to be shifted next year to a new site on Khapri Valley. Its proper location with reference to the depot for logs for the mill is to be decided after the general site has been fixed by the Divisional Forest Officer, Surat.

During February 1928 the Officer in charge of the Wood Workshops of the Forest Research Institute, Dehra Dun, visited one Mill in Northern Circle and three saw mills in Southern Circle. His suggestions were adopted where practicable with due regard to the local conditions.

There was one accident at Bomanhalli mill resulting in cutting of the fingers of a benchman. The accident was due to negligence of the mill hand himself and could not have been prevented by any appliance for safety of workmen.

The Chief Inspector of Factories has insisted on the introduction of a riving knife on every bench in the saw mills.

As an experiment one riving knife has been purchased for one bench in Dandeli Mill, and will shortly be fixed to the bench. If experience shows it to be really useful as an accident preventing device every bench working in the mills of this Department will be equipped with a riving knife.

Output and Conversion Costs, etc.

Weekly progress reports of the input and output of the mills are scrutinised by the Forest Engineer and causes of any sudden increase or decrease investigated. Early each month the conversion costs per c. ft. as regards stores, labour and establishment are worked out for the previous month. These are compared with previous results and any evident irregularities enquired into and rectified.

In the attached Table (A) mill output of sawn material and analysis of sawing costs for the last three years are given for comparison.

Except for Badgi Mill the output is higher for every mill in the Presidency. In this Mill the sawing costs are also slightly higher than the previous years. This apparently unsatisfactory result is due to the fact that very inferior material which was left unsawn in previous years was sawn during the current year.

The higher output of Dandeli mill is satisfactory and is partly due to the addition of Foden Portable Mill to this mill, at the tail end of the year. Bomanhalli mill maintained its previous average output. On the other hand Kirwatti, Haste, Chikhalda mills have shown a steady increase.

The lower sawing charges in the case of Bomanhalli and Kirwatti Mills are due to the fact that the work of these Mills is chiefly confined to production of M. G. Railway sleepers, which if raw material supply is well maintained accounts for comparatively high output. The figures of costs given in the Table (A) below are exclusive of interest and depreciation charges. For the year under report overhead charges on account of interest and depreciation work out on the whole to 1·41 annas per c. ft. of sawn material as shown below :—

	Rs.
Interest at 6 per cent. on book value on 1st April 1927	12,386
Depreciation at 8 per cent. on the original capital value	24,300
	36,686
Interest and depreciation charges per c. ft. ..	36,686
	4,17,480

equals to 1·41 annas.

Table A.

Name of saw Mill	Output during the year in c. ft.			Average sawing cost per c. ft. in annas		
				Stores		
	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28
Dandeli Mill ..	81,737	1,27,755	1,45,445	1·37	1·31	1·03
Foden Portable ..			Not known			
Bomanhalli Mill..	83,003	61,679	90,014	0·94	0·94	0·94
Kirwatti Mill ..	36,557	41,514	51,471	1·32	1·46	1·26
Badgi Mill ..	32,624	38,423	36,440	1·73	1·68	1·87
Haste Mill ..	....	29,530	34,740	....	1·45	1·47
Chikhalda Mill ..	43,229	53,410	59,370	1·95	1·61	1·46
Karanjara Mill ..	31,334	36,349	....	2·65	1·69	....
Total for the Presidency.	3,08,384	3,88,660	4,17,480	1·50	1·41	1·21

Table A—contd.

Name of Saw Mill.	Average sawing cost per c. ft. in annas—*contd.*								
	Labour.			Establishment.			Total excluding depreciation and interest.		
	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28	1925-26	1926-27	1927-28
Dandeli Mill ..	4·92	3·69	3·53	0·78	0·71	0·62	7·07	5·71	5·18
Foden Portable ..				Not known					
Bomanhalli Mill..	2·62	2·91	2·27	0·86	1·15	0·77	4·43	5·00	3·98
Kirwatti Mill ..	3·22	2·92	2·31	0·81	0·80	0·58	5·35	5·18	4·15
Badgi Mill ..	3·80	3·83	3·77	1·14	0·95	1·01	6·67	6·46	6·05
Haste Mill ..	..	3·47	2·88	..	1·01	0·92	..	5·93	5·27
Chikhalda Mill ..	2·45	3·25	3·00	1·72	1·08	1·09	6·12	5·94	5·55
Karanjara Mill ..	4·21	3·60	..	1·50	1·31	..	8·36	6·60	..
Total for the Presidency.	3·57	3·47	3·00	1·05	0·94	0·77	6·12	5·82	4·98

It is interesting to note that the conversion costs are progressively decreasing from year to year as shown below :—

Year	Convertion cost per c.ft. excluding interest and depreciation
1924-25 ..	7·71 annas
1925-26 ..	6·12 ,,
1926-27 ..	5·82 ,,
1927-28 ..	4·98 ,,

Comparing this year's figures with the figures for 1924-25 (when for the first time the data for sawing costs for the various Government Saw Mills was collected and stores and output accounts organised), the economy in sawing costs per c.ft. is annas 7·71 *minus* annas 4·98 = 2·73 annas per c.ft. Therefore on the basis of the current year's output the saving amounts to over Rs. 70,000. Compared to the year 1926-27 economy effected in sawing costs results in a saving of nearly Rs. 22,000.

These amounts are net savings to Government due to greater efficiency in the running of the saw mills. Increased output, lower working costs on account of strict control over conversion and over stores consumption, and better organization, are the chief contributing factors.

The first factor which affects the cost of conversion is the output of the mill. This fact is brought out strikingly in Plate No. 15 in which are plotted graphs illustrating the relation of conversion costs to output. The graphs are of 3 different mills in which the output varied through a considerable range. Each point or dot represents the average cost of conversion for a month, the whole extending over a period of 12 months.

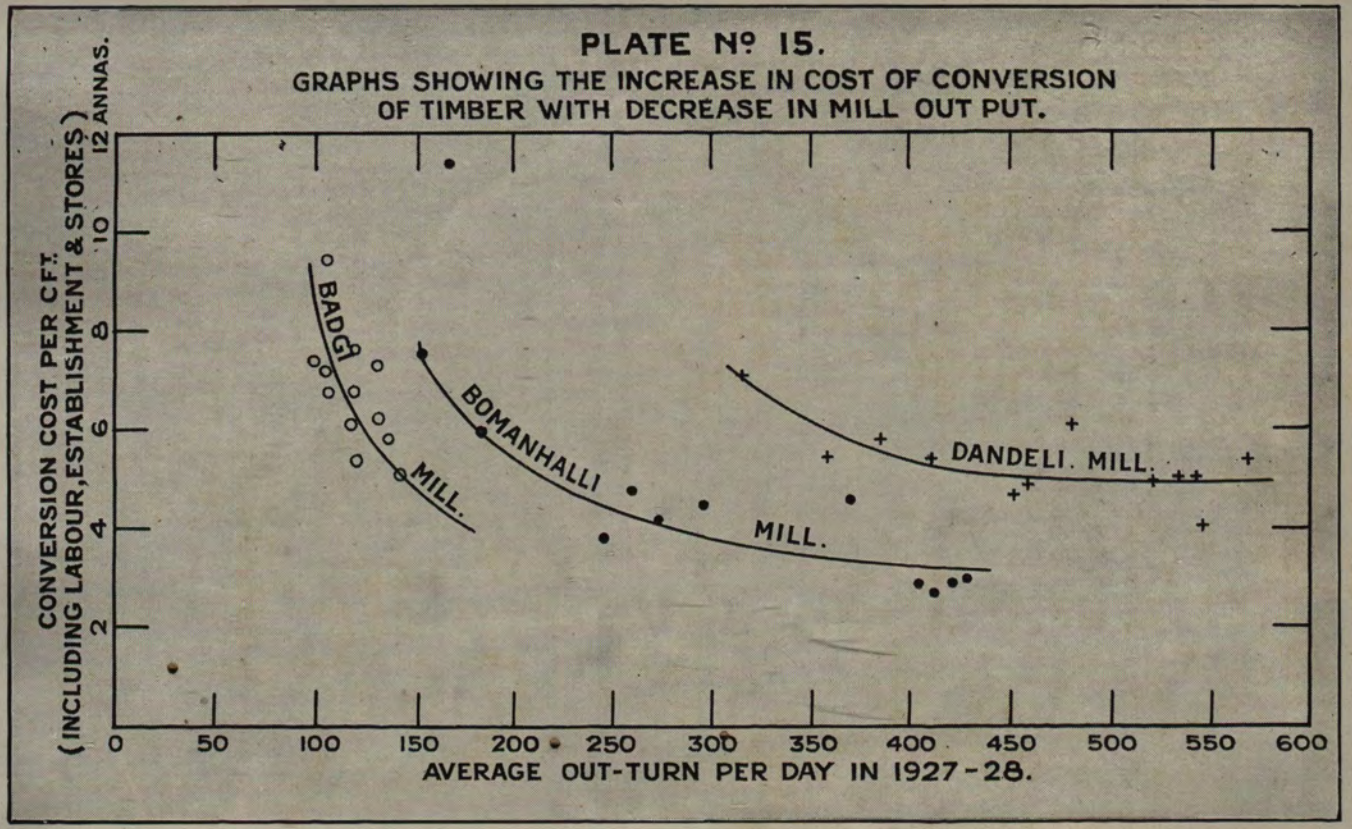
The graphs show at a glance how reduction in output results in considerable increase in conversion costs. This is explained by the fact that the labour and establishment charges within certain limits of outturn are practically constant, only the consumption of stores like saw blades, emery wheels being proportionately affected by the increase or decrease in output.

The question of outturn being as important as has been indicated in the previous paragraph, maximum daily outputs have been fixed for each mill in the Southern Circle to attain which every effort is being and will be made :—

Index figures for daily output.

Name of Mill	Index maximum output adopted
Dandeli Mill ..	400 c.ft. (mixed sizes)
Dandeli log Mill ..	200 ,, (Railway sleepers)
Bomanhalli Mill ..	350 ,, (Railway sleepers and scantlings, etc.)
Kirwatti Mill ..	165 ,, (M.G. Railway sleepers and scantlings, etc.)

Mill Trading Accounts.—The results of the year's mill work are shown in the subjoined account sheets.



[*To face page 34*

Trading Account of the Chikhalda Saw Mill for the year 1927-28.

Capital Cost Rs. 61,017 + 325 — 23,182 = 38,160.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
1. Timber (unconverted) ..		71,289	1. Sales		84,891
(a) Stock at the end of the previous year 23,612 c.ft. at 0-10-0 per c.ft.	14,757		Sale of sawn material during the year 73,059 c.ft.	1,55,145	
(b) Taken over during the year for conversion 136,458 c.ft. at 0-8-0 per c.ft.	68,229		*Less*— Stock of sawn timber at the end of the previous year 46,290 c.ft.	88,972	
Total ..	82,986			66,173	
Less—			*Add*—		
(c) Stock on hand at the end of the year 23,395 c.ft. at 0-8-0 per c.ft.	11,697		Stock of sawn timber at the end of the year 11,153 c.ft.	18,718	
2. General Stores ..		5,553	Miscellaneous ..		7,725
(a) Stock at the end of the previous year.	2,500		Loss for the year ..		20,462
(b) Expenditure during the year.	5,553				
Total ..	8,053				
Less—					
(c) Stock at the end of the year.	2,500				
3. Establishment ..		11,326			
4. Labour		6,852			
5. Depreciation at 8 per cent. on capital expenditure (Rs. 61,017).		4,881			
6. Repairs to buildings ..		134			
7. Miscellaneous ..		13,043			
(a) General	66				
(b) Carting sawn material.	12,977				
Total ..		1,13,078	Total ..		1,13,078

Trading Account of the Badgi Saw Mill for the year 1927-28.

Capital Cost Rs. 17,844 + 81 − 5,376 = 12,549.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
1. Timber (unconverted) ..		35,893	1. Sales		92,101
(*a*) Stock at the end of the previous year 20,535 c.ft. at 0-8-0 per c.ft.	10,267		Sale of sawn material during the year.	62,225	
(*b*) Taken over during the year for conversion 60,436 c.ft. at 0-8-0 per c.ft.	30,218		*Less*—		
			Stock of sawn timber at the end of the previous year 22,255 c.ft.	37,439	
Total ..	40,485			24,786	
Less—			*Add*—		
(*c*) Stock on hand at the end of the year 9,185 c.ft. at 0-8-0 per c.ft.	4,592		Stock of sawn timber at the end of the year 30,846 c.ft.	67,315	
2. General Stores ..		4,273	Miscellaneous ..		530
(*a*) Stock at the end of the previous year.	5,494				
(*b*) Expenditure during the year.	4,273				
Total ..	9,767				
Less—					
(*c*) Stock at the end of the year.	5,494				
3. Establishment ..		3,747			
4. Labour		8,603			
5. Depreciation at 8 per cent. on capital expenditure (Rs. 17,844).		1,427			
6. Repairs to buildings ..		156			
7. Miscellaneous ..		13,603			
(*a*) General	913				
(*b*) Carting sawn material.	12,690				
Profit for the year ..		24,929			
Total ..		92,631	Total ..		92,631

Trading Account of the Haste Saw Mill for the year 1927-28.

Capital Cost Rs. 27,368 + 238 — 4,377 = 23,229.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
1. Timber (unconverted) ..		36,104	1. Sales		87,393
(*a*) Stock at the end of the previous year, 92,138 c. ft. at 0-8-0 per c. ft.	46,069		Sale of sawn material during the year.	29,575	
(*b*) Taken over during the year for conversion 108,782 c. ft. at 0-8-0 per c. ft.	54,391		*Less*— Stock of sawn timber at the end of the previous year, 7,379 c. ft.	13,528	
Total ..	1,00,460			16,047	
Less—			*Add*—		
(*c*) Stock on hand at the end of the year, 128,711 c. ft. at 0-8-0 per c. ft.	64,356		Stock of sawn timber at the end of the year, 29,779 c. ft.	71,346	
2. General Stores ..		3,196	Miscellaneous ..		1,403
(*a*) Stock at the end of the previous year.	8,327				
(*b*) Expenditure during the year.	3,196				
Total ..	11,523				
Less—					
(*c*) Stock at the end of the year.	8,327				
3. Establishment ..		3,147			
4. Labour		6,248			
5. Depreciation at 8 per cent. on capital expenditure (Rs. 27,368).		2,189			
6. Repairs to buildings ..		114			
7. Miscellaneous ..		9,558			
(*a*) General ..	769				
(*b*) Carting sawn material.	8,789				
Profit for the year ..		28,240			
Total		88,796	Total ..		88,796

Trading Account of Bomanhalli Saw Mill for the year 1927-28.

Capital Cost Rs. (25,209 *plus* 27 = 25,236 — 9,382) = 15,854.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
I. Timber (unconverted) ..		42,965	*I. Sales* ..		2,11,962
(*a*) Stock at the end of the previous year.	2,900		Sale of the sawn material during the year.	1,52,922	
(*b*) Taken over during the year for conversion.	40,875		*Less*—		
Total ..	43,775		Stock of sawn material at the end of the previous year.	56,545	
Less—				96,377	
(*c*) Stock at the end of the year.	810		*Add*—		
II. General Stores ..		5,902	Stock of sawn material at the end of the year.	1,15,585	
(*a*) Stock on hand at the end of the previous year.	..		II. Miscellaneous (waste slabs, etc.)		451
(*b*) Expenditure during the year.	5,902				
Total ..	5,902				
Less—					
(*c*) Stock at the end of the year.	..				
III. Establishment.		19,440			
IV. Labour	..	..			
V. Depreciation at 8 per cent. on capital expenditure, 25,209.		2,017			
VI. Repairs to buildings ..		77			
VII. Miscellaneous (carting cost of sawn material to Dandeli).		10,033			
Profit for the year ..		1,31,979			
Total ..		2,12,413	Total ..		2,12,413

Trading Account of the Dandeli Saw Mill for the year 1927-28.

Capital Cost Rs. (1,03,091 + 23,053 = 1,26,144 − 45,677) = 80,467.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
I. Timber unconverted ..		3,75,421	I. Sales		5,45,310
(*a*) Stock at the end of the previous year.	..		Sale of sawn material during the year.	4,79,978	
(*b*) Taken over during the year for conversion.	3,75,421		*Less*— Stock of sawn material at the end of the previous year.	49,475	
Total ..	3,75,421			4,30,503	
Less—			*Add*—		
(*c*) Stock on hand at the end of the year.	..		Stock of sawn material at the end of the year.	1,14,807	
II. General Stores ..		10,066			
(*a*) Stock at the end of the previous year.	..		II. Miscellaneous ..		6,275
(*b*) Expenditure during the year.	10,066				
Total ..	10,066				
Less—					
(*c*) Stock at the end of the year.	..				
III. Establishment ..		32,536			
IV. Labour		9,360			
V. Depreciation on capital expenditure at 8 per cent. on Rs. 1,03,091.	8,247	8,610			
Depreciation on Foden outfit for 2½ months on Rs. 21,750 at 8 per cent.	363				
VI. Repairs to buildings ..		110			
VII. Miscellaneous ..		506			
Profit for the year ..		1,14,976			
Total ..		5,51,585	Total ..		5,51,585

Trading Account of the Kirwatti Saw Mill for the year 1927-28.

Capital Cost Rs. 9,840 *plus* 90 — 787 = Rs. 9,143.

Expenditure.			Income.		
	Rs.	Rs.		Rs.	Rs.
I. Timber unconverted ..		36,224	I. Sales— ..		1,05,884
(*a*) Stock at the end of the previous year.	23,867		(*a*) Sale of the sawn material during the year.	24,328	
(*b*) Taken over during the year for conversion.	33,308		(*b*) Sleepers delivered to the M. S. M. Railway deducting carting charges.	85,650	
Total ..	57,175		Total ..	1,09,978	
Less—			*Less*—		
(*c*) Stock on hand at the end of the year.	20,951		Stock of sawn material at the end of the previous year.	38,125	
II. General Stores ..		3,981			71,853
(*a*) Stock at the end of the previous year.	..		*Add*—		
(*b*) Expenditure during the year including the value of stores supplied by the Forest Engineer.	3,981		Stock of sawn material at the end of the year.	34,031	
Total ..	3,981		II. Miscellaneous ..	..	
Less—					
(*c*) Stock at the end of the year.	..				
III. Establishment ..		8,552			
IV. Labour		..			
V. Depreciation on capital cost of Rs. 9,840 at 8 per cent.		787			
VI. Repairs to buildings ..		86			
VII. Miscellaneous ..		..			
Profit for the year ..		56,254			
Total ..		1,05,884	Total ..		1,05,884

The mills on the whole show a net profit of Rs. 3,35,916 as against Rs. 1,40,800 last year, the Northern Circle and Southern Circle contributing Rs. 99,001* and 96,115† respectively to the increase. Out of the three mills in the Northern Circle the one at Chikhalda only showed a loss of Rs. 20,462 due to the high royalty of annas eight per cubic foot charged for the unconverted timber (which is ordinarily unsaleable and has in the unconverted form no value whatsoever) received in the mill. It is doubtful if any royalty at all should be debited to the mills for such material. All the three mills of the Southern Circle showed handsome profits. The splendid financial results of the year, as outlined above, are largely due to hard-work, efficient organization and rigid attention to economy for which much credit devolves upon Mr. Mirchandani, Mill Foremen, and the Divisional Forest Officers concerned.

(*d*) General.

The information given in the foregoing paragraphs of this Chapter conveys a very fair idea of the general scope of the activities of the Forest Engineering Establishment and serves to make it clear that the necessity, both present and future, for as far ahead as we can reasonably look, for the maintenance of a small Engineering Branch in this Presidency cannot be questioned.

Apart from the special technical qualifications required to deal efficiently with mill machinery and skidding plant, its maintenance and actual working, the centre of Engineering activity will be always in Kanara and the Dangs whose busy Forest officers cannot be expected to deal with work of this nature.

If the necessity for the Engineering establishment be granted, it is important, and indeed essential, that the field staff, of the class of supervisor and overseer should be made permanent. At present this staff is wholly temporary. This is a state of affairs which is neither fair to the men themselves nor tends to the outturn of efficient work particularly of the kind and in the localities with which we have to deal. Representation of the case of some of our present temporary employees has not been lacking and it is hoped that the above sketch of the work and future outlook of the Engineering Branch will convince Government of the necessity of giving these men substantive appointments.

* The Northern Circle in the previous year showed a loss of Rs. 66,294 and a profit of Rs. 32,707 during the year under report. The contribution of the Northern Circle to the increase in profit is therefore Rs. 66,294 + 32,707 = Rs. 99,001.

† The Southern Circle showed in the previous year a profit of Rs. 2,07,094 and a profit of Rs. 3,03,209 during the year under report. The increase in the profits in the Southern Circle therefore is Rs. 3,03,209 − 2,07,094 = Rs. 96,115.

CHAPTER V.

FINANCIAL RESULTS.

(Forms 68, 69 and 70.)

The revenue and expenditure of the year compare with those of the last year and the average of the previous quinquennium 1922-23 to 1926-27 as follows :—

Circle	Year	Revenue	Expenditure	
			Conservancy and Works	Forest Capital outlay charged to revenue
		Rs.	Rs.	Rs.
Northern	1927-28 ..	23,93,909	4,03,403	1,42,091
	1926-27 ..	26,65,140	4,40,866	1,03,447
	Average ..	25,16,529	3,98,435	39,282
Central	1927-28 ..	12,40,372	1,22,696	37,018
	1926-27 ..	11,60,828	1,07,369	20,568
	Average ..	13,44,639	1,06,635	6,959
Southern	1927-28 ..	29,37,085	10,51,204	58,883
	1926-27 ..	30,63,591	10,02,495	70,608
	Average ..	27,82,028	10,99,413	26,828
Sind	1927-28 ..	7,14,209	94,961	3,480
	1926-27 ..	7,63,284	99,754	7,835
	Average ..	6,88,014	96,696	2,141
General Direction, Bombay Forest College, and Utilization Circle.	1927-28 ..	54	43,348 (a)	114
	1926-27 ..	25	44,356	13
	Average ..	1,874	13,449	78
Engineering	1927-28 ..	254	46,357	1,922
	1926-27 ..	3,602	63,468	18,333
	Average ..	2,582	39,780	9,033
Total Presidency ..	1927-28 ..	72,85,877	17,61,969	2,43,508
	1926-27 ..	76,56,420	17,58,308	2,20,869
	Average ..	73,35,666	17,54,408	85,221
Difference between ..	1927-28 ..	−3,70,543	+3,661	+22,639
	1926-27			

N. B.—The above figures are exclusive of expenditure under BVI work advances which are recoverable.

(*a*) Includes Rs. 43,049 on account of interest on past capital expenditure not charged to revenue.

Circle	Year	Expenditure—*contd.*		Surplus or deficit	Percentage of surplus to gross revenue
		Establishment	Total		
		Rs.	Rs.	Rs.	
Northern	1927-28 ..	6,72,945	12,18,439	11,75,464	49·1
	1926-27 ..	6,69,179	12,13,492	14,51,648	54·5
	Average ..	6,52,369	10,90,086	14,26,443	56·7
Central	1927-28 ..	5,82,168	7,41,882	4,98,490	40·2
	1926-27 ..	5,89,220	7,17,157	4,43,671	38·2
	Average ..	5,71,805	6,85,399	6,59,240	49·0
Southern	1927-28 ..	6,18,136	17,28,223	12,08,862	41·2
	1926-27 ..	6,35,852	17,09,015	13,54,576	44·2
	Average ..	6,54,562	17,80,803	10,01,225	36·0
Sind	1927-28 ..	2,99,463	3,97,904	3,16,305	44·3
	1926-27 ..	2,92,868	4,00,457	3,62,777	47·5
	Average ..	2,80,400	3,79,237	3,98,777	44·9
General Direction, Bombay Forest College, and Utilization Circle.	1927-28 ..	86,603 (*a*)	1,30,065	−1,30,011	..
	1926-27 ..	1,33,578	1,77,947	−1,77,922	..
	Average ..	1,07,276	1,20,803	−1,18,929	..
Engineering	1927-28 ..	42,041	90,320	−90,066	..
	1926-27 ..	86,138	1,67,044	−1,64,342	..
	Average ..	82,965	1,32,678	−1,30,096	..
Total Presidency ..	1927-28 ..	23,01,356	43,06,833	29,79,044	40·9
	1926-27 ..	24,06,835	43,86,012	32,70,408	42·7
	Average ..	23,49,377	41,89,006	31,46,660	43·6
Difference between ..	1927-28 ..	−1,05,479	−79,179	−2,91,364	..
	1926-27				

N.B.—The above figures are exclusive of expenditure under BVI work advances which are recoverable

(*a*) Includes Rs. 818 on account of loss by exchange.

The gross revenue of the year fell by Rs. 3,70,543 as compared with that of the previous year and by Rs. 49,789 as compared with the average of the preceding five years while the fall in the surplus as compared with that average is Rs. 1,67,616. The fall is in the Northern, Southern and Sind Circles and the Conservators have given the following reasons :—

Northern Circle.—Tightness of the money market and depression in the timber trade.

Southern Circle.—Poor prices for the teak pole coupes, smaller output of timber from the high forest areas and decreased earnings on the Alnawar-Dandeli Railway in N. D. Kanara ; also failure of contractors in S. D. Kanara to make satisfactory deliveries in time for the annual timber sales.

Sind Circle.—Non-sale of some of the coupes on account of fall in fuel and charcoal market rates, low realizations from coupes sold on account of non-disposal of stocks of fuel in the hands both of Government and contractors and failure of the lac crop in Karachi, Hyderabad and Shikarpur Divisions.

The gross revenue of the Central Circle rose by Rs. 79,544 mainly on account of the recovery of five years' arrear rent for all the grass kurans leased to the Military Department in the Poona Division as per Government Resolution, Revenue Department, No. 7835 of 28th November 1927.

The increase in expenditure under " B—Conservancy and Works " being very small calls for no remarks.

The increase in expenditure under " Capital Outlay on Forest " is due to the construction of roads on a large scale in the Northern Circle and to the cost of the Dara-Dhadgaon Road work in the Central Circle having been charged to this Department instead of to the P. W. D. as hitherto.

The decrease in expenditure under " Establishment " is due to the very small debit on account of loss by exchange this year, abolition of the post of the Superintending Engineer, Forest Department, absence on leave of the two Forest Engineers, and reduction of the establishment in the Engineering Branch.

The sources of revenue and the heads of expenditure are analysed and compared below :—

Sources and heads	General Direction and Forest Engineering Branch	Northern Circle	Central Circle	Southern Circle
		Rs.	Rs.	Rs.
I*a* and II*a*. Timber ..	....	20,17,942	2,91,011	22,27,904
I*b* and II*b*. Firewood ..	....	27,692	1,06,528	2,03,435
Ic and IIc. Bamboos ..	....	59,552	11,995	74,627
I*d*. Sandalwood	....	2	4,782	1,76,111
II*d*. Grazing and Fodder Grass	....	1,24,767	6,00,777	88,243
Ie and II*e*. Other produce ..	....	52,882	61,796	61,623
III. Drift and confiscated forest produce.	....	721	2,087	567
IV. Forests not managed by Government.	....	4,313	20,506	5
V. Miscellaneous ..	308	1,12,506	1,46,329	1,11,217
Refunds	....	—6,474	—5,439	—6,647
Total ..	308	23,93,903	12,40,372	29,37,085

Sources and heads	Sind	Total		Increase or decrease
		1927-28	1926-27	
	Rs.	Rs.	Rs.	Rs.
I*a* and II*a*. Timber ..	1,01,409	46,38,266	50,18,073	−3,79,807
I*b* and II*b*. Firewood ..	4,48,206	7,85,861	8,51,215	−65,354
Ic and IIc. Bamboos ..	....	1,46,174	1,40,245	+5,929
I*d*. Sandalwood	....	1,80,895	1,21,018	+59,877
II*d*. Grazing and Fodder Grass	38,767	8,52,554	7,68,634	+83,920
Ie and IIe. Other produce ..	35,240	2,11,541	2,55,502	−43,961
III. Drift and confiscated forest produce.	453	3,828	12,079	−8,251
IV. Forests not managed by Government.	....	24,824	37,373	−12,549
V. Miscellaneous	91,018	4,61,378	4,66,461	−5,083
Refunds	−884	−19,444	−14,180	−5,264
Total ..	7,14,209	72,85,877	76,56,420	−3,70,543

Heads	General Direction	Forest Engineering Branch	Northern Circle	Central Circle	Southern Circle
Expenditure. B. Conservancy and Works.	Rs.	Rs.	Rs.	Rs.	Rs.
I. Timber, etc., extracted by Government agency.	....	16,642	2,23,056	15,142	8,91,529
II. Timber, etc., extracted by consumers or purchasers.	....	....	33,029	12,354	4,496
III. Maintenance, Repairs and Renewals, 52AI-Live stock, Stores, Tools and plant and 52AII-Communications and Buildings.	114	32,107	1,76,126	48,633	1,60,164
IV. Conservancy and Regeneration and 52AIII-Organization, Improvement and extension of forests.	....	....	69,358	23,676	43,666
V. Miscellaneous ..	299	−470	43,925	59,909	10,232
Interest	43,049	....	....	....	....
Total ..	43,462	48,279	5,45,494	1,59,714	11,10,087

Heads	Sind	Total		Increase or Decrease
		1927-28	1926-27	
Expenditure.	Rs.	Rs.	Rs.	Rs.
B. Conservancy and Works.				
I. Timber, etc., extracted by Government agency.	72,324	12,18,693	12,16,624	+2,069
II. Timber, etc., extracted by consumers or purchasers.	735	50,614	53,262	−2,648
III. Maintenance, Repairs and Renewals, 52AI-Live stock, Stores, Tools and plant and 52AII-Communications and Buildings.	12,720	4,29,864	4,15,954	+13,910
IV. Conservancy and Regeneration and 52AIII-Organization, Improvement and extension of forests.	5,629	1,42,329	1,42,556	−227
V. Miscellaneous	7,033	1,20,928	1,06,556	+14,372
Interest	....	43,049	44,225	−1,176
Total ..	98,441	20,05,477	19,79,177	+26,300

Heads	General Direction	Forest Engineer	Northern Circle	Central Circle	Southern Circle
Establishments.	Rs.	Rs.	Rs.	Rs.	Rs.
I. Pay of Officers ..	35,715	9,209	1,16,719	1,01,559	1,12,535
II. Pay of Establishments..	13,382	20,127	4,34,218	3,75,482	3,96,545
III. Allowances, etc. ..	28,733	9,842	1,00,203	89,815	91,593
IV. Contingencies ..	2,355	2,863	21,805	15,312	17,463
Establishment charges payable to Central Government.	5,600	....	....	....	....
Loss due by Exchange ..	818	....	....	....	....
Total ..	86,603	42,041	6,72,945	5,82,168	6,18,136
Grand Total ..	1,30,065	90,320	12,18,439	7,41,882	17,28,223
Surplus, 1927-28 ..	−1,30,011	−90,066	+11,75,464	+4,98,490	+12,08,862
Surplus, 1926-27 ..	−1,77,922	−1,64,342	+14,51,648	+4,43,671	+13,54,576
Difference ..	+47,911	+74,276	−2,76,184	+54,819	−1,45,714

Heads	Sind Circle	Total		Increase or Decrease
		1927-28	1926-27	
Establishments.	Rs.	Rs.	Rs.	Rs.
I. Pay of Officers ..	67,960	4,43,697	4,88,531	−44,834
II. Pay of Establishments ..	1,61,627	14,01,381	14,17,323	−15,942
III. Allowances, etc. ..	54,295	3,74,481	3,65,206	+9,275
IV. Contingencies ..	15,581	75,379	81,087	−5,708
Establishment charges payable to Central Government.	....	5,600	8,766	−3,166
Loss due by Exchange ..	....	818	45,922	−45,104
Total ..	2,99,463	23,01,356	24,06,835	−1,05,479
Grand Total ..	3,97,904	43,06,833	43,86,012	−79,179
Surplus, 1927-28 ..	+3,16,305	+29,79,044	....	....
Surplus, 1926-27 ..	+3,62,777	....	+32,70,408	....
Difference ..	−46,472	....	....	−2,91,364

The Revenue and expenditure are further analysed as follows :—

Class	General Direction and Forest Engineer		Northern Circle	
	——	Per cent.	——	Per cent.
REVENUE.	Rs.		Rs.	
Major Produce	....	..	20,45,636	85
Minor Produce	....	..	2,37,201	10
Miscellaneous	308	100	1,17,540	5
Refunds	....	..	—6,474	..
Total ..	308	..	23,93,903	..
EXPENDITURE, CONSERVANCY AND WORKS AND 52A.				
Extension and Constitution ..	....	..	9,568	2
Improvement	1,009	1	2,28,550	42
Exploitation	47,854	52	2,91,257	53
Miscellaneous	—171	..	16,119	3
Interest	43,049	47	....	..
Total ..	91,741	..	5,45,494	..
ESTABLISHMENT.				
Administration	64,938	75	43,420	6
Executive	....	..	1,25,128	19
Protective	21,665	25	5,04,397	75
Total ..	86,603	..	6,72,945	..
Forest Engineering Branch ..	....	..	....	..
Grand Total ..	....	..	....	..

Central Circle		Southern Circle		Sind Circle		Total	
——	Per cent.	——	Per cent.	——	Per cent.	——	Per cent.
Rs.		Rs.		Rs.		Rs.	
4,02,321	32	26,07,451	89	5,49,615	77	56,05,023	77
6,74,569	54	2,24,492	7	74,007	10	12,10,269	16
1,68,921	14	1,11,789	4	91,471	13	4,90,029	7
—5,439		—6,647	..	—884	..	—19,444	..
12,40,372	..	29,37,085	..	7,14,209	..	72,85,877	..
1,215	1	587	..	....	..	11,370	1
66,355	41	1,91,139	17	17,216	18	5,04,269	25
77,769	49	9,68,234	82	74,192	75	13,99,306	70
14,375	9	10,127	1	7,033	7	47,483	2
....	..	....	..	....	..	43,049	2
1,59,714	..	11,10,087	..	98,441	..	20,05,477	..
43,114	7	46,254	7	49,613	17	2,47,339	11
1,78,964	31	2,04,208	33	1,38,719	46	6,47,019	28
3,60,090	62	3,67,674	60	1,11,131	37	13,64,957	59
5,82,168	..	6,18,136	..	2,99,463	..	22,59,315	98
....	..	....	..	....	..	42,041	2
....	..	....	..	....	..	23,01,356	..

The expenditure incurred during the year from the provision under 52A Capital Outlay on forests, subsequently charged to Revenue is as shown below :—

Heads	General Direction	Northern Circle	Central Circle	Southern Circle	Sind Circle	Forest Engineering Branch	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I. Live-stock Stores, etc.	114	5,173	2,988	1,906	768	1,889	12,838
II. Communications and buildings.	..	1,25,156	33,388	54,668	2,712	33	2,15,957
III. Organization, etc.	..	11,762	643	2,308	..	....	14,713
Total ..	114	1,42,091	37,019	58,882	3,480	1,922	2,43,508

The outstandings on account of revenue at the commencement and close of the year were :—

	On 1st April 1927	On 31st March 1928
	Rs.	Rs.
Northern Circle	1,90,146	1,23,470
Central Circle	6,267	10,535
Southern Circle	1,87,378	1,11,058
Sind Circle	1,80,552	1,53,914
Total ..	5,64,343	4,03,977

During the year an unrecoverable amount of Rs. 5,939 was written off in the Southern Circle under proper authority.

The outstandings on account of contractors and disbursers were as follows :—

	On 1st April 1927	On 31st March 1928
	Rs.	Rs.
Northern Circle	35,335	18,176
Central Circle	232	7
Southern Circle	56,249	20,721
Sind Circle	1,720	2,464
General Direction	53,255	50,067
Total ..	1,46,791	91,435

CHAPTER VI.

RESEARCH AND EXPERIMENTS.

Observations were continued in the experiments initiated in 1926 under the control of the Chief Conservator and are recorded below :—

Subject No. 1.—Reasons for variation in results of teak regeneration work. (North, West and East Thana Divisions).

Except in so far as they confirm existing knowledge of the necessity of—

(1) a good burn,

(2) use of good seed, treated by approved methods,

(3) use of vigorous transplants,

(4) timely and careful sowing and transplanting,

(5) timely and thorough weeding operations.

The experiments contribute little or nothing to a determination of the reasons for variations in—

(*a*) the number of survivals and

(*b*) the size of plants, on different patches in the same coupe.

Assuming that factors 1 to 5 above are present for every patch in one and the same coupe, and since the rainfall received must be approximately the same of every patch in it, other influences on growth and survival percentage apart from the seasonal ones appear to be confined to variations in soil and drainage conditions and aspect changes and possibly to some extent to incidence of external damage by animals and insects.

Further observations do not appear likely to yield more definite conclusions and they have therefore been discontinued; but continued attention will be paid to the necessity of ensuring that factors 1 to 5 are invariably present in all sowing and planting operations.

Subject No. 2.—Germination test of teak seeds (Surat, Kolaba, Belgaum, West Khandesh, Panch Mahals and S. D. Kanara Divisions). The experiments carried out during the past two years under the different conditions prevailing in several Districts of the Northern, Central and Southern Circles show pretty conclusively that on the whole the best results (*i.e.*, the highest percentage of germination) are obtained from—

(1) seed alternately soaked and dried,

(2) seed weathered by exposure to rains during monsoon, dried thoroughly thereafter and stored in a well ærated place.

The factors of oldness or newness, and size of seed, do not appear to be in themselves specially influential. It is only necessary that the seed should be of good quality.

It is worthy of note as regards treatment No. (1) that soaking for *one* week followed by drying for *one* week, the process being thrice repeated, is found sufficient in the Belgaum Division.

Treatments Nos. 1 and 2 above should be adopted in future in teak sowing, according as local officers prefer, they being guided in their choice by results obtained locally by these experiments. It should, however, be noted that 'weathered' seed owing to its tendency to germinate on very light showers should preferably not be sown prior to the real setting in of the monsoon rain. Further experiments will be confined to testing the results of the fortnightly and weekly periods of soaking and drying.

Subject No. 3.—Comparative results of dibbling, Wet nursery planting and dry nursery planting. (E. D. Kanara).

The experiment is complete. It is already established that dibbling is the most economical method of stocking a cleared area and failures can best be replaced by young plants raised in nursery beds on the plantation area during the first part of the same monsoon in which the regeneration operations are carried out.

Subject No. 4.—Effect of thinning on teak coppice at different ages (East Thana Division). Observations will have to be continued for a long period of years to permit of definite conclusions.

Subject No. 5.—Effect of different degrees of thinning in Teak plantations of different ages. (West Nasik, West Thana, N. D., E. D., S. D., W. D., Kanara and Belgaum Divisions). The next thinnings are to be done during 1929-30.

In the heavily thinned sub-plots junglewoods and bamboos have received a considerable stimulus and are giving good protection to the soil. Under planting in such plots is therefore not necessary ; nor is it likely to prove successful as is demonstrated by the attempts made during the last two years to raise shade-bearing species as underwood.

Subject No. 6.—Effect of reduction and abolition of watering in casuarina plantations (W. D. and S. D. Kanara Divisions) :—

The results obtained show—

(1) that watering cannot be entirely dispensed with.

(2) that it can be considerably reduced.

(3) that the extent of reduction is dependent on soil conditions and depth of sub-soil water level.

The experiment is complete. It is ordered that in future watering should be done from the commencement of the dry season once in every 4 days, the frequency being increased or not as indication of its necessity is afforded by the observed condition of the plants.

Subject No. 7.—Annual girth increment of Sandal. (Belgaum and Dharwar-Bijapur Divisions). Remeasurement is to be carried out in the test plots in Belgaum in September 1928 and in Dharwar-Bijapur in November 1929.

Subject No. 8.—Increment of babul under different degrees of thinning. (Hyderabad Division). The system of thinnings originally devised and outlined in the last year's report has been found to be rather complicated and difficult to work. A simpler system of thinnings is being drawn up.

Subject No. 9.—Propagation of lac. (Karachi Division). In July 1927, the ber (Zizyphus jujuba) trees of Group A pruned in November 1926 were found to have produced shoots insufficiently succulent for inoculation. The trees of the third or C group which had been pruned in April 1926 were found to have shoots fit for inoculation. So trees of this third group which had been pruned in April 1926 were termed Group A and infected on 24th July 1927 with 675 sticks. The infection however was not successful owing to rains which continued for 8 days directly after

PLATE No. XVI

One year four months old bahan (Populus euphratica) regrowth in sample plot 10-A of the Alipur forest (Shikarpur Division). The original growth which was four years old when felled in November 1926 brought in a handsome revenue at the rate of Rs. 26 per acre per annum. (Please see Chapter VI, Research Subject No. 10 of this Report.)

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the baskets were tied. Thin incrustation that followed as a result of the infection on a few of the branches was eaten by ants and squirrels. The result was that phunki lac collected on 3rd September 1927 weighed 13¼ tolas. 1927-July-infection of trees in Group A having failed and the shoots of the trees of the Group B (originally Group A) which had been pruned in November 1926 not being ripe for inoculation, the trees of Group A were inoculated for the 2nd time on 14th November 1927 with 1,500 sticks. Phunki lac collected on 21st December 1927 weighed 201 tolas.

Subject No. 10.—Economic age for cutting bahan (Populus euphratica) coppice and degree of thinning required (Shikarpur Division). Out of the four sample plots 10A, 10B, 10C and 10D of ½ acre each laid out last year, one plot 10A, 4 years old, was cut during 1926-27, and yielded Rs. 53-5-0 representing a net profit of Rs. 25-10-0 per acre per annum. Plot 10B, 5 years old cut during the year under report, showed an outturn of 624 poles yielding a profit of Rs. 55-14-0 representing a net return of Rs. 25 per acre per annum.

Plots 10C and 10D will be cut during the years 1928-29 and 1929-30 at the ages of 6 and 7 years.

The results arrived at up to now are extremely interesting. It would however be premature to accept them as conclusive on the question of rotation for bahan at present.

The experiment will be continued.

Subject No. 11.—"Stoning" of teak seedlings as protection against animals and drought and an aid to their growth (East Khandesh, Poona and West Thana Divisions). The results recorded are contradictory and generally hopelessly vague. This operation appears to be impracticable to adopt on any considerable scale. The experiment has been dropped.

Subject No. 12.—Artificial propagation of Rosha grass (North and West Khandesh Divisions). The conclusions which may be accepted as the results hitherto of the experiments made are given below:—

(1) that, in view of the comparative costs, strip-ploughing should be adopted as more economical;

(2) that ill drained or water-logged localities should be avoided.

(3) that the effect of burning prior to introduction of the seed is negligible.

Observations on points 4 to 6 as shown below are indecisive and experiments will be continued with special reference to these during 1928-29 and 1929-30:—

(4) the effect of annual burning and grazing in plots where the rosha crop has been established require further study;

(5) Further experiments are necessary to determine the relative advantages of—

(1) sowing (2) planting, as means of propagation;

(6) more observations are required on the effect of different soils on germination and growth.

Subject No. 13.—Propagation of hirda (Terminalia chebula) (Satara and Poona Divisions). These experiments will be continued both in Satara and Poona Divisions. From results so far recorded, the transplanting of natural seedlings in pits appears to give the greatest hope of success. Raising of seedlings in nurseries was a failure due to attacks of land crabs on the seedlings.

Further attempts at raising seedlings from treated seed in nursery beds will however be persisted with and efforts made to minimise the attacks of land crabs.

Subject No. 14.—Propagation of bamboos (Kolaba Division). Nothing has been done during the present year. The experiment will be recommenced (during the current year *viz.*, 1928-29) under the personal supervision of the Divisional Forest Officer, Kolaba.

Subject No. 15.—Relative value of different species for making charcoal (Satara, Sukkur, Karachi, West Thana and Belgaum Divisions). The original experiment was found to be too limited in scope. Fresh experiment will be made in the year 1928-29 with a view to establish some connection between the volume and weight of the stacked billets and the volume of charcoal obtained in the kiln or kilns prepared from such billets, and the price realised per unit of weight and volume.

Subject No. 16.—Effect of improvement fellings on diameter growth (Surat Division—Dangs). Two sample plots were laid out during 1927-28. One has been improvement felled and the measurements of the trees left standing recorded. The measurements of all the trees in the other plot which has not been and will not be treated in any way, have also been taken and recorded. Next measurements will be taken in 1930-31.

Subject No. 17.—Effect of cutting back superfluous shoots of two year old teak seedlings (West Nasik Division). The observations during 1927-28 confirm the tentative conclusions arrived at during 1926-27 and summarised in the last year's report.

Subject No. 18.—Investigation into the effect of shade on Lantana (Belgaum Division). It does not appear that the experiment yields or is likely to yield any very definite results beyond showing that where the canopy is markedly dense, the development of lantana is clearly restricted.

The experiment has been discontinued.

Subject No. 19.—Coppicing of Anjan (East Nasik, East Khandesh and West Khandesh Divisions). On the whole the experiment in the three Divisions show up to date that the period November to April is favourable to the highest percentage of coppicing stumps from trees felled and that the best production of coppice or pollard shoots is secured when felling is carried out at between 6″ to 12″ above ground level.

PLATE No. XVII

Sample plot (10-C) containing seven years old bahan coppice in Alipur forest (Shikarpur Forest Division) due for felling in 1928-29. (Please see Chapter VI, Research Subject No. 10 of the Report.)

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The observations on the existing plots will be continued for another two years, during which also a fresh series of plots will be laid down and fellings carried out exactly as in the case of the plots already coppiced.

Subject No. 20.—Preservation of natural Anjan (Hardwickia binata) seedlings. (East Nasik, East Khandesh and West Khandesh Divisions). The observations made since 1926, in the rains of which year they were commenced in the plots laid out in the above three Divisions show that the mortality is exceedingly heavy and that weeding, stoning and closure to grazing combined can do little to mitigate it. It would seem that the somewhat uncertain rainfall is the chief factor in deciding the percentage of survival in any area, though naturally areas subject to fire and grazing will suffer more than those enjoying complete protection from damage by these agencies. It is well known that anjan suffers very severely from grazing, cattle being partial to this species. Further experiment would not seem to serve any useful purpose. The experiment has therefore been discontinued.

Investigations in the following five subjects will be commenced during the year 1928-29 :—

Subject No. 21.—(West Thana and Kolaba). Propagation of solid bamboos (Dandrocalamus strictus).

Subject No. 23.—(Surat, East Thana, North Khandesh, Kolaba and N. D. Kanara). Comparative results of stump planting when stumps are cut before and after removal to plantation site.

Subject No. 24.—(West Nasik, East Thana, North Khandesh, Kolaba and E. D. Kanara). Sowing teak on rabs in lines instead of in bunches.

Subject No. 25—(North Thana, Kolaba and E. D. Kanara). Propagation of injaili species.

Subject No. 26.—(Panch Mahals, North Thana, East Thana and West Thana). Cost of Simul sowings and planting and percentage of survivals.

The following experiments were tried by officers on their own initiative :—

Lac.—Experiments in connection with the propagation of lac as detailed below were carried out, except in the Akrani, Dharwar-Bijapur and Hyderabad Divisions, under the guidance of Mr. Jhaveri, Assistant Professor of Entomology, Agricultural College, Poona.

Panch Mahals (*Godhra Range*).—During 1926-27 nothing was done beyond pruning *palas* (*Butea frondosa*) trees in three coupes of Block XVI for inoculation in October-November 1927. Inoculation was done with success in the above three coupes in November 1927 with 13 maunds of brood lac sticks obtained from Baroda at a cost of Rs. 231-4-0. Subsequently pruning of *palas* was done in other localities for inoculation in June 1928, seed lac for which (5,900 sticks) was obtained from the three coupes inoculated in November 1927 mentioned above.

Surat (*Mandvi Range*).—The crop obtained in July 1927 was very poor. Seed lac obtained from Pratapgad Range of the Central Provinces was of poor quality and full of parasites so that the inoculation done in July 1927 was not successful. Inoculation in November 1927 with good fresh lac obtained from Central Provinces was satisfactory.

North Khandesh (*Akrani*).—The experiment made last year (*i.e.*, 1926-27) came to nothing. Causes of the failure are not known. Fresh experiment will be made next year.

West Khandesh.—The experiment carried out in 1926-27 was a failure probably due to defective brood. In November 1927, 95 *palas* trees were inoculated with 1,300 sticks in coupe 21, Block I. The swarming was complete by the end of December and was satisfactory. Hot winds during March and ants however did serious damage. It was observed that coppice shoots being more easily accessible suffered more from ants than pollard shoots. Also the lac on pollard shoots is more vigorous and healthier than on coppice shoots.

Dharwar Bijapur.—Experiments in propagation of lac were continued. The yield of the monsoon crop collected in November was 36 lbs. which was forwarded to the Forest Economist to determine its quality and market value. No summer crop was obtained and it appears that if propagation on a large scale is successful, only one commercial crop during the year can be expected. The experiment will be continued on a larger scale during the coming year.

S. D. Kanara.—Attempts to propagate lac on *Shorea talura* in Siddapur Range were a failure.

Hyderabad.—Swarming was satisfactory but adverse climatic conditions did serious damage. It is considered that the best conditions for lac are access to the south with trees sufficiently far apart to admit free play of air, and protection from the north. Experiments to test these provisional conclusions will be carried out next year.

Salai tapping.—The small experiment carried out under the personal guidance of the Minor Products Expert from the Forest Research Institute, Dehra Dun, on salai tapping during the year conclusively proved that there is no prospect of being able to collect the gum-oleo-resin from *salai* in North Khandesh Division, at a cost which would warrant salai tapping on a commercial scale, specially now that the selling price of turpentine has dropped. Other things demonstrated by the experiment are—

(*a*) Trees tapped for a second year do not give increased yield.

(*b*) Normal method of tapping, *viz.*, by a band 4″ wide applied as low down on the trunk as possible with "freshings" of ½″ to 1″ yields the best results.

(*c*) Trees of higher girth classes yield more abundantly than others.

Propagation of species.

Teak.—Stump-planting was done on a large scale in N. D. Kanara with excellent results.

Eucalyptus, Mahogany, and Sissoo (Dalbergia sissoo).—Th growth of these exotics planted in S. D. Kanara in very recent years was reasonably successful ; but it is not yet possible to state what the subsequent development of the seedlings will be.

Fodder species.—Propagation of species of fodder value was continued in C. D. Kanara. *Anjan* was successfully grown without watering. Seed of this species, *honne* (*Pterocarpur marsupium*) and *Pithecolobium* were distributed amongst villagers. Planting of *honne* by the villagers was very successful.

Tobacco as catch-crop.—A successful experiment was made with tobacco as catch crop in a teak regeneration area at Gersappa. An excellent crop was obtained but difficulty in marketing this commodity makes it doubtful whether there is any chance of its succeeding as a regular method of cheap regeneration.

Sandal.—Attempts made in Satara Division to propagate sandal by dibbling seed under the shelter of bushes both in open and closed forest met with a fair degree of success. The monsoon was favourable. The seed took 6 to 7 weeks to germinate and there were a large number of seedlings by the middle of August. Though a few died, a large number of seedlings survives at present. Dibbling of sandal seed will be continued on a large scale during the year 1928-29.

Improvement of grazing areas.—The Agricultural Department continued their experiment at Meharun in East Khandesh and Bhamburda in Poona with fenced sample plots in forest. It is too early yet to record any definite results.

CHAPTER VII.

ADMINISTRATION.

The office of the Chief Conservator of Forests was held by the following officers :—

Mr. A. G. Edie, C.I.E. ..	1st April to 22nd April 1927.
Mr. E. M. Hodgson ..	23rd April 1927 to 11th February 1928.
Mr. H. L. Newman ..	12th February to 31st March 1928.

The territorial Circles were held by the following officers :—

Northern Circle ..	Mr. G. E. Marjoribanks from 1st April to 18th July 1927.
Do. ..	Mr. G. S. Butterworth from 19th to 29th July 1927.
Do. ..	Mr. R. W. Inder from 30th July to 18th November 1927.
Do. ..	Mr. A. C. Hiley from 19th November 1927 to 31st March 1928.

Central Circle	..	Mr. E. M. Hodgson from 1st April to 22nd April 1927.
Do.	..	Mr. C. E. L. Gilbert from 23rd April 1927 to 31st March 1928.
Southern Circle	..	Mr. G. S. Butterworth from 1st April to 16th July 1927.
Do.	..	Mr. A. C. Hiley from 17th July to 13th November 1927.
Do.	..	Mr. H. L. Newman from 14th November 1927 to 9th February 1928.
Do.	..	Mr. R. W. Inder from 10th February to 31st March 1928.
Sind Circle	..	Mr. P. E. Aitchison throughout the year.

The following officers worked in the Engineering Branch :—

Mr. H. C. Holmes as Forest Engineer, from 1st April 1927 to 1st July 1927 when he went on leave. Mr. T. K. Mirchandani, Extra Assistant Conservator of Forests who is working in this branch held the charge of the office of the Forest Engineer, Southern Division, in addition to his own from 2nd July 1927 to 31st March 1928.

Changes among Divisional Forest Officers were frequent chiefly owing to absence of officers on leave, as many as 17 out of the total number of 28 Divisions having changed hands during the year. Thirteen Divisions were held wholly by Imperial Officers, six partly by Imperial and partly by Provincial Officers and eight wholly by Provincial Officers.

At the close of the year the number of officers attached to Divisions as Assistants or Sub-Divisional Forest Officers, all of the Provincial service, was 12. West and East Khandesh and North Thana and West Nasik Sub-Divisions were as an experimental measure made into semi-independent charges to lessen the routine duties of the Divisional Forest Officers and give them more time to attend to the more important matters of the Division, and at the same time to let the Sub-Divisional Forest Officers develop a sense of initiative and responsibility as a preparatory measure to their holding Divisional charges as and when required. The year witnessed the death of Messrs. Butterworth and Miller, a matter of much sorrow to their colleagues, and a loss of experienced officers which Government could ill afford.

Subordinate and clerical establishments.—No direct recruits were appointed to the Ranger's grade as no students were sent to the Madras Forest College, Coimbatore, for training during 1925. Out of seven candidates selected for the 1928-30 course, two were found unfit while under practical training.

The Foresters' training class was held as usual in the Northern Circle under the supervision of Mr. D. A. Kundalkar, Ranger. Twenty-nine subordinates of the Northern and Central Circles were admitted to the class of whom four were sent back as unfit or on account of illness. Of

the remaining twenty-five students, twenty-four passed the final examination. In the Southern Circle no regular class was held. Two Foresters and eight Guards were placed for training under experienced Rangers and all passed out successfully at the written examination held at the end of their training. Such classes will be continued every year as experience has shown that they are of definite value. They provide a test of intellect and also a useful period of probation and in consequence the possibility of promoting men who subsequently prove to be of little use is greatly lessened. In addition, successful candidates benefit considerably by their training which covers all the more important sides of a Forester's work.

CASUALTIES AND PUNISHMENTS.

Particulars	Northern Circle	Central Circle	Southern Circle	Sind Circle	Total	
					1927-28	1926-27
1. Retirements	7	25	11	2	45	49
2. Deaths	8	7	16	6	37	37
3. Resignations	10	13	9	10	42	45
4. Prosecutions	2	7	..	..	9	6
5. Degradations	10	11	7	6	34	32
6. Dismissals, removals, etc. ..	17	40	5	6	68	84
Total 1927-28 ..	54	103	48	30	235	..
Total 1926-27 ..	81	83	53	36	..	253

The health of the Forest staff except in North Thana and West Nasik was on the whole fairly good. There was as usual a great deal of ill-health on account of malaria in North Thana and Peint of the West Nasik Division. A special Medical Officer was appointed in West Nasik Division for six months from 14th November 1927 to 13th May 1928 as sanctioned in Government Resolution, Revenue Department, No. 8029/24 of 2nd April 1927. He did good work attending to the staff and labour at Badgi and Haste Mills. It would be an advantage if he could be appointed earlier in the year, *i.e.*, from 1st October as the malaria season is over by the end of March.

One officer of the Provincial Forest Service was suspended. His case awaits the decision of Government.

The two Foresters in North Thana who were under trial in a Criminal Court were convicted in the Magistrate's Court but on appeal to the Sessions Court, Thana, were given the benefit of the doubt and acquitted.

Mr. D. G. Thakkar, a Forester, in West Thana is being prosecuted for breach of trust, but as his whereabouts are not known the case is pending in the Kalyan Magistrate's Court.

Mr. L. R. Mahale, Range Forest Officer, Dhulia, who was implicated in the defalcations referred to in the last year's report was prosecuted

on two separate charges, together with his clerk and depôt guards, Dhulia. They were all convicted by Sub-Divisional Magistrate, Dhulia. In their appeal to the Sessions Judge, the sentences were reduced though the convictions were upheld. Mr. Mahale then appealed to the High Court, who acquitted him in both the cases on technical grounds. He was dismissed from the service.

There were also two more cases of misappropriation one in the West Khandesh Division by a Forester and Guard, and the other in the Poona Division by a Guard. In both the cases the accused were prosecuted and convicted.

Heavy defalcations committed in the Kolaba Divisional office to the tune of about Rs. 5,000 came to light and were thoroughly investigated. The case is now under the consideration of Government for final orders. Mr. Dhopeshwarkar, the Head Clerk of the Division who was responsible for these defalcations, absconded and has not been traced.

The work of the Rangers and other subordinate Protective staff and office establishment has been reported to be satisfactory with only few exceptions.

Civil Suits.

East Khandesh.—Some of the civil suits lodged by the timber merchants for refund of 'duty' levied on forest produce imported by rail from Native States, were decided after the close of the year against Government.

Kanara N. D.—The civil suits filed by the Forest Department against contractor Mr. S. N. Athnikar and his surety in the Dharwar Court and contractor Mr. N. V. Kale and his surety in the Belgaum Court, were decreed with costs in favour of Government.

Of the three suits filed against Government two were dismissed with costs and one was withdrawn.

Kanara S. D.—All the eight suits pending in the courts at the beginning of the year were decided during the year, six in favour of Government and two against Government, while five new suits, three by Government and two against Government of which one was subsequently withdrawn, were filed in the course of the year and are pending. Appeals in four cases were filed in the District Court, Kanara, and are still pending in the court.

The amounts for recovery of which the four appeals and three original suits were filed by Government total Rs. 12,339, while the only suit against Government now pending is for claim of Rs. 5 (valuation for the relief of court fees).

Kanara W. D.—Appeals filed against the decisions of the First Class Subordinate Judge, Karwar, in Civil Suits Nos. 113 to 117 of 1926 in connection with the recovery of the amounts from the sureties of a defaulting contractor, were decided by the District Court, Kanara. The original decrees in appeals Nos. 1 to 4 were confirmed but that in appeal No. 8 reversed; steps are being taken for execution of the decrees in appeal No. 8 through the District Government Pleader, Kanara. As

regards appeals Nos. 1 to 4 the matter is under correspondence with the Remembrancer of Legal Affairs.

Belgaum.—One civil suit was instituted during the year for the recovery of Rs. 2,000 with interest from a defaulting contractor and his surety's son. Two suits were brought against Government (1) by a contractor to restrain this Department from preventing him from removing material from a coupe and from recovering the balance of a fine imposed, also for the refund of fine already collected and (2) by an applicant who claims a right near the forest of Yedalgud in Gokak Taluka.

The brief summary given above will show that the burden of litigation in the Southern Circle became no lighter during the year and there are at present no signs that it will do so in the near future.

One contractor in Sind has filed a civil suit against Government for a claim of Rs. 200 for declaration only.

Inspection and Tours.

The Chief Conservator toured in the three Circles of the Presidency proper. Divisional and other offices were inspected by the Conservators as usual during the year. Irregularities and defalcations that came to light have been recorded elsewhere.

Land Revenue Administration.

The Divisional Forest Officer, West Nasik, was in charge of the Land Revenue Administration of Peint taluka and Vawar Mahal of the Thana District. He was also in charge of the Excise administration of Peint Taluka.

The Divisional Forest Officer, Surat, continued to be ex-officio Assistant Political Agent, Dangs.

The revenue management of the Saiwan, Bapgaon and Sawa Mahals created by Government Resolution, Revenue Department, No. 1442/24 of 29th July 1927 in the Thana District was entrusted to the Forest Department in the person of the Divisional Forest Officer, North Thana.

The revenue management by the Forest Department of the seven villages in East Khandesh was satisfactory.

The revenue administration of the Akrani Mahal was conducted as usual by the Forest Department.

The Raisingpur Estate continued to be managed by the Forest Department under the Court of Wards a Forester being in charge throughout the year.

The three Forest Mahals, Kulgi, Virnoli and Dandeli in Kanara, N. D., and the Mahals of Bilki and Kirwatti of Kanara, E. D., continued to be under the administration of the Forest Department. The inhabitants of all the villages are contented and their relations with the Department were satisfactory.

Kumries.—During the year an area of 312 acres and 22 gunthas in groups I, II and III assigned for Kumries in 11 villages in W. D. Kanara, was relinquished voluntarily by the kumriwalas of Supa Petha.

In the Belgaum Division owing to unavoidable circumstances the Divisional Forest Officer only found it possible to visit a limited number of kumri villages during the year under report. The " A" villagers were given their annual allotments, which are demarcated on the ground and with the exception of 5 villages—4 in Khanapur Range and 1 in the Patne Range—in which only a part of the allotment was kumried, all other villages kumried the whole of their allotments. In the case of the five villages necessary refunds of the assessments recovered for the uncultivated portion of their allotments are being made since the villagers are to be charged assessment on the areas actually cultivated only.

Out of seven villages of Kanara Coast Division the forests of which are under the Panchayat system five were visited by the Divisional Forest Officer and he found the forests well cared for.

The relations between this Department and other Government Departments continued to be cordial during the year.

CHAPTER VIII.

GENERAL.

Slackening and depression of trade in timber, fuel and charcoal accounts for the reduction in gross receipts and consequently surplus income as compared with the previous year. It is hoped this set back will prove to be purely temporary. More money was spent on works of development and improvement than last year and liberal expenditure is still necessary for such works as will bring in increased revenue directly or indirectly.

Thana Gurcharans.—Proposals regarding the activities of and the work to be done by the Gurcharan Officer and his staff have been submitted to Government. On issue of Government orders on these proposals and appointment of Gurcharan Officer, preparation of a scheme for the exploitation of the Gurcharans will be taken in hand.

The management by the Forest Department of certain revenue jungles in Rohri taluka in Sind mentioned in the last year's report is yet pending as the demarcation of boundaries is not complete. The revenue jungles in Deh Changlani, Mathelo Bhira, Loi Dhamaji and Jhanghiari of Ghotki taluka comprising an area of 2,439 acres were made over to the Forest Department in July 1927. These are also due for demarcation.

Forest cultivation.—As in the past forest land suitable for cultivation was given out in all the Circles during the year under report. Out of such forest land in Panch Mahals 6,429 acres were disforested under Government Resolution, Revenue Department, No. 9862/24 of 22nd December 1927 with a view to their being allotted for permanent cultivation. There was a great demand for forest land for cultivation in the North and West Khandesh Divisions and all suitable land is being cleared of tree growth before being given out to the people. In Sind

remission of assessment amounting to Rs. 5,146 had to be granted owing to absolute failure of Kharif and Rabi crops raised within forest lands, on account of heavy rains, locusts and " Rati " disease.

Forest Settlements.—Forest settlements continued to increase in all the three Khandesh Divisions. The settlements at several places were also extended to admit of new settlers.

The year was a good one for the settlers in the East Khandesh Division who were able to repay the deposits which had been returned to them in the preceding year to help them through a bad season. An unfortunate event occurred in the Chopda Satpuras where the settlement at Gandya Devara was completely destroyed by fire with all the property of the settlers. ' Every effort was made to help the settlers and hutting material, etc., was given to them free. Tagai was also liberally distributed to them and the deposits in the form of cash certificates were not recovered in their case.

One thousand two hundred and eighty-five acres of forest land were cleared of tree-growth in the Taloda Fuel Felling Series in North Khandesh for extending the settlements of Nandia, Kusumwada, Kansai, Lakkadkot and Lakhapur and for providing economic holdings to the existing Khatedars.

Tagai was given to settlers in the forest settlements in North and West Khandesh Divisions to purchase bullocks and seed. Almost all of it was repaid by them as the season was a good one.

During the year under report 34 plots of 30 acres each were demarcated at Mhasala in Sakri taluka in West Khandesh Division for settlers who are being selected in consultation with the revenue authorities.

The new settlement at Petla opened last year has not been fully occupied as out of 29 plots allotted last year only 20 have stuck to the settlement and the rest have gradually left though the land and water supply are superior to those in other settlements which are flourishing. The main reasons were that the water in the adjoining Nala though plentiful is not good, and the settlers were men from the adjoining villages, to which they return after tilling and harvesting. Efforts are being made to select new settlers from distant villages so that they may not quit the settlement and arrangements are being made through the Revenue Department for sinking well in this settlement.

The settlers were of great use to the Forest Department in forest operations including road work.

The Berads at Dandeli in the Southern Circle continued to do useful work and gave no trouble whatsoever.

No new betta assignments were made during the year in the Southern Circle.

The orders of Government on the report of the Forest Grievances Enquiry Committee were received during the year. Many of the recommendations of the Committee have been accepted by Government and the new concessions granted have doubtless been much appreciated by the

public. Lists of the privileges formerly granted together with those now sanctioned are being prepared in Vernaculars for wide publication among the privilege holders.

The revenue, during the year, earned by the Alnawar-Dandeli Railway dropped to Rs. 53,570 as against Rs. 71,259 in the previous year, and in place of the satisfactory surplus of the year before, a profit of only Rs. 3,377 was realised. This decrease was largely due to the much smaller export of Manganese. The supply of waggons particularly for logs and bamboos was very inadequate and apart from serious complaints from purchasers of timber, the Department suffered a definite loss on the bamboo traffic. After a good deal of correspondence and use of the telegraph wires, there was some improvement almost at the close of the working season. Out of 20,000 Khandis (5,000 tons) of timber awaiting export at Dandeli, the Railway could only clear about 8,000 Khandis from January to April and obviously this state of affairs must, if allowed to continue, reflect badly on future timber sales. The Railway Company is being addressed with a view to securing an improved transport service in future.

The Divisional Forest Officer, Belgaum, also complains that fuel contractors in his Division did not get an adequate supply of waggons on the M. & S. M. Railway at the end of the year for export of their fuel.

The construction of the extension line of the Gaikwad Baroda State Railway from Jharia to Waghai (in the Dangs) is in progress and is expected that it will be opened for traffic next cold weather.

The telephone lines in N. D. Kanara were very unsatisfactory and were seldom in order when urgently wanted.

Famine Fodder operations were carried out only in the Thana and Panch Mahals Districts through contractors of the nine year monopoly contract, 7,480,590 lbs. of grass in steam-pressed bales being stored during the last season.

Local grass storage scheme.—According to this scheme 40 lakhs lbs. of grass have been kept in stock by the 20 year grass contractors.

Match factories.—The Gujrat Islam Match Manufacturing Company, Ahmedabad, removed 100 cartloads of matchwood from Panch Mahals Division and paid royalty of Rs. 37-8-0 for them.

The India Match Supply Trading Company of Gandevi, removed 100 cartloads of matchwood from Block VI of Mandvi Range for Rs. 164-1-0.

The matchwood coupe No. 2 in each of the three Thana Divisions was sold to—

(North Thana)—Thana Match Works Company who removed 300 cartloads for Rs. 337-8-0 at Rs. 1-2-0 per cart,

(West Thana)—The Andheri Match Manufacturing Company who removed 678 cartloads for Rs. 1,697 at Rs. 2-8-0 per cartload,

(East Thana)—No offer was received.

Besides the above, matchwood was removed from the forests of the Kolaba and Belgaum Divisions on concession rates by Match Factories who found it profitable.

The exploitation of soft-woods from Beranki Range (S. D. Kanara) for match manufacture was discontinued by the Western India Match Company as apparently the cost of extraction was prohibitive.

Experimental introduction of matchwood species is in hand at several places.

Gujerath floods.—In order to give immediate relief to the people of the flood affected areas in Gujerath, 29 waggon loads of timber purchased for Rs. 25,282 and 4 waggon loads of bamboos were sent by the Divisional Forest Officer, Panch Mahals, to Viramgam, Nadiad, Amod and Jambusar. In the beginning there was a fair demand and about half of the material was disposed of. Subsequently Provincial Relief Committee opened their own depôts and the demand for Government material diminished.

Grass kurans in the Poona District.—These were formerly leased to the Military Department from year to year free of rent but in the conference of the representative officers of the Government of India and the Government of Bombay which was convened on 31st October 1927 the following terms were agreed upon :—

The grass farms department should pay Re. 1 per acre per annum for 20,000 acres for the two years 1921-22 and 1922-23, Rs. 1-8-0 per acre per annum for 20,000 acres for four years 1923-24 to 1926-27 and Rs. 1-8-0 per acre per annum for actual area in their charge in each year for five years 1927-28 to 1931-32. The rate is considered to be low.

Grass kurans in the Ahmednagar and Belgaum Districts.—The representatives of the Government of Bombay agreed that the question of these kurans must be further considered with reference to the Secretary of State's land rules. The Government of Bombay would then submit any proposals they wished to make as regards the rent of these kurans to the Government of India.

Locusts appeared at the beginning and end of the cold season and did some damage to tree-growth and inforest cultivation in Sind.

The Agricultural Exhibition held during the year at Roha in the Kolaba Division, at which a forest stall was opened helped considerably to popularise the Forest Department and to instruct the public on the aims and objects of the Department. No less than 40,000 people visited the show and all are said to have been impressed with the forest demonstration, illustrative of the methods employed for forest protection and the result of teak regeneration and development of actual seedlings of different ages. All this had a very desirable effect and much credit is due to Mr. Y. K. Panse, Range Forest Officer, Roha, who was also one of the officers who had helped in organizing a forest stall at the Agricultural show held in Poona in 1926.

At the request of the Commissioner, Southern Division, the Divisional Forest Officer, Kolaba, was asked to inspect the three Casuarina

plantations in the Ratnagiri District. He inspected them in March 1928 and his report regarding thinnings, rotation and financial aspect of them was sent to the Commissioner, Southern Division, after the close of the year.

Proposals are in hand to start a museum of commercial forest products but, upto the present, suitable existing accommodation has not been and does not seem likely to be found. A commodious and well designed building is necessary to make a success of a museum of this kind. In other words it will be necessary to build one. Considerable expenditure will be involved and there is unfortunately little prospect of funds being made available in the near future.

Remarks of Divisional Commissioners on each Circle are printed below :—

Commissioner in Sind (Mr. G. A. Thomas, C.I.E., I.C.S.) :—

" The Commissioner in Sind has the honour to state that he has no remarks to offer on the annual Administration Report of the Sind Forest Circle, for the year 1927-28, received with letter No. 2410 dated 30th August 1928, from the Conservator of Forests, Sind Circle."

Commissioner, Northern Division (Mr. W. W. Smart, I.C.S.) :—

" The preparation of a scheme for the exploitation of the Gurcharans in the Thana District is still pending with the Forest Department though their re-settlement was sanctioned under Government Resolution, Revenue Department, No. 9811, dated 23rd June 1926.

The Collector of Thana is not hopeful of the economic success of the transfer to the Forest Department of the Revenue Administration of the four Forest Mahals of Saiwan, Bapgaon, Sawa and Vawar in the Dahanu taluka and Mokhada Peta sanctioned in Government Resolution, Revenue Department, No. 1442/24, dated 29th July 1927. The arrangement must, however, be tried for some years before a definite opinion can be pronounced on it.

Disforestment of 6,428 acres 28 gunthas of land being unfit for tree-growth but useful for agriculture in the Panch Mahals was proposed and has been sanctioned in Government Resolution, Revenue Department, No. 9862/24, dated 2nd December 1927.

A proposal for afforestation of nearly 3,000 acres in the Eastern Mahals in the Panch Mahals District has been made by the Collector after consultation with the Divisional Forest Officer, as the land is more useful for tree-growth.

" 2. The total number of forest offences decreased from 6,435 to 6,207 during the year. In 852 cases offenders could not be traced, 5,233 cases were compounded bringing in Rs. 38,861 as compensation, in seven cases offenders were let off with a warning and 83 cases were taken to court. Seventy-one cases including 24 cases of the previous year were decided during the year and 66 of them resulted in convictions. The number of fires decreased from 617 to 509 but the area burnt increased from 74 square miles to 80 square miles.

. Communal punishments for notoriously bad fires inflicted in the preceding year, publication of fire-notices and the grant of rewards at specially organised Darbars for good protection of forests are some of the chief causes which contributed to the decrease in the number of offences.

" 3. Receipts from grazing amounted to Rs. 82,072 as against Rs. 84,338 in the previous year. The number of cattle impounded decreased from 46,065 to 37,178 due to the adoption of the policy of impounding cattle only in cases of deliberate trespass and absence of herdsmen as ordered in Government Resolution, Revenue Department, No. 7324/24, dated 19th July 1927.

" 4. The total revenue from the working of the forests in the Northern Circle decreased from Rs. 26,65,000 to Rs. 23,94,000 during the year, while the total expenditure remained almost the same, *viz.*, at Rs. 12,12,000. The surplus revenue thus amounted to Rs. 11,82,000 in 1927-28, as against Rs. 14,54,000 in the preceding year. The decrease is shared by the three Thana Divisions and is reported to be due to tightness in the money market and depression in timber trade which hampered the sale of coupes at favourable prices.

" 5. Three saw mills were worked departmentally in the Northern Circle during the year as against four in the preceding year. The Mill at Karanjara in the Dangs stopped working. The trading account of the Chikhalda saw mill in the Dangs showed a loss of Rs. 20,649 due mainly to the high rate of royalty, *viz.*, Re. 0-8-0 per cft. charged on timber at the mill. The two mills at Haste and Badgi in the Nasik District worked with profit.

" 6. Expenditure on 'Communications and Buildings' from the provision under '52 A—Forest Capital Outlay' increased from Rs. 86,215 in 1926-27 to Rs. 1,25,126 during the year of report, due mainly to the speedier progress in construction of new roads in the Dangs. No new roads were undertaken in the Thana District though several useful repairs to existing important forest roads in that District were carried out during the year. The Collector of Thana presses as in the previous year for more attention being paid to, and more money being spent on, the construction of good roads in the forest areas and of quarters for subordinates especially in the malarious tracts of North Thana and Shahapur. The money spent would be in the interest of forest administration as better communications would help exploitation and the provision of quarters will promote the recruitment of a better class of subordinates."

Commissioner, Central Division (Mr. J. Ghosal, C.I.E., I.C.S.) :—

" The following review of the Administration Reports of the Northern and Central Circles for 1927-28 in respect of the areas in the Central Division, is forwarded to the Chief Conservator of Forests, with reference to Government Resolution, Revenue Department, Nos. 5542 dated 31st May 1919 and 1110, dated 19th April 1921.

Forest areas.—There was a net decrease of 2,585 square miles in the area under forest in the Central Division owing to disforestment of large

areas in the West Khandesh, Poona and Satara Divisions of the Central Circle, and in some districts of the Northern Circle for purposes of cultivation and for the grant of lands in exchange for those submerged in the 'Mulshi Lake' in the Poona Division.

Demarcation.—In the Northern Circle the demarcation work was completed. Nine miles of new boundary line were demarcated in the North Khandesh, Poona and Satara Divisions, at a cost of Rs. 113.

Forest surveys.—No survey work was done during the year in the Central Circle. In the Northern Circle the survey of rabi lands in Peint taluka was in progress.

Management of forests.—This calls for no special notice. Last year (1926-27) the Conservator of Forests, Central Circle, remarked that owing to the continued depression in the timber trade some of the coupes due for felling remained in arrears in almost every Division. This state of things continued during the year of report. The Conservator states 'as stated in the last report some of the coupes remined in arrears in almost every Division. In the case of 'improved fellings' however it is not desirable to keep this work in arrears and coupes had to be disposed of for whatever price they fetched as it is expected that the value realised from the improved stock in future will more than compensate for the apparent loss sustained at present.'

Communications.—Construction work was in progress in the Central Circle on (1) Katcha roads in the Satpudas in East Khandesh, (2) Subir-Nawapur road in West Khandesh, (3) Dara-Dhadgaon road in North Khandesh—in all 30 miles in length at a cost of Rs. 15,948.

In the Northern Circle construction work was done on the following roads :—

West Nasik.	Cost. Rs.
Goldari-Ozar road	6,215
Sawarna-Behedpada road	7,864
East Nasik.	
Hatgadvani road	12,148

Repairs to existing roads were executed as under :—

Northern Circle.	Rs.
West Nasik	4,328
East Nasik	82

Central Circle.

The expenditure incurred was Rs. 3,866.

The metalling projects on the Waghai-Nasik and Waghai-Nawapur roads in the Northern Circle are making steady progress. The Conservator of Forests, C. C., remarks that since the opening of the katcha

roads in Khandesh there appear to be signs that a considerable increase in revenue under the head of ' duty on foreign timber ' will accrue. Good progress was made with the construction work on the Dara-Dhadgaon road and that with the exception of muraming, work on section II has been completed and the road up to a length of 14 miles from Dara has been rendered motorable for a light car.

Rs. 25,842 and 8,936 were spent respectively on the construction of and repairs to buildings. An expenditure of Rs. 7,525 and 101 was also incurred on the construction of and repairs to wells respectively. The Conservator of Northern Circle remarks that ' improvement of water supply is a very urgent matter, but location of suitable wells is a great difficulty and the progress in construction is consequently very slow, the services of the Water Diviner were asked for, but owing to financial stringency these could not be made available.'

Forest offences.—There has been a small decrease in the total number of cases, although there has been an increase in the offences under ' injury by fire ' and ' other offences ' by 109 and 148 respectively. The increase under ' injury by fire ' is noticeable in all Divisions, except North Khandesh and East Nasik. The increase in East Khandesh and Satara Divisions in the fire cases is attributed by the Conservator, C. C., to the suspension of the system of communal punishment, whereas the Conservator, N. C., observes that communal punishment in the form of enhanced grazing fees had but slight effect on the villagers of Nasik and Dindori Ranges. The increase under ' other offences ' is noticed in all Divisions except in East Khandesh, North Khandesh and Satara. The Conservator of Forests, N. C., makes the following remarks on the increase in his Circle in the case under ' other offences : ' ' The increase of 66 cases is accounted for by very numerous encroachments round forest plots given out for cultivation in West Nasik Division. This unsatisfactory state of things is being put right. Surveyors have been employed during the fair season in properly demarcating the areas given out for cultivation so that there may be no excuse for encroachments and if encroachments take place they will be at once detected.' There was also an increase in offences under unauthorised felling in the East and West Nasik Divisions. In West Nasik the increase took place in the Peint Ranges and is said to be due to better detection work by the subordinate staff.

Protection from fire.—The area burnt during the year of report was 217 square miles as against 74·6 of the previous year. As remarked by the Conservator of Forests, C. C., protection from fire was not very satisfactory in the year of report. The abnormal increase was in the area burnt in the East and North Khandesh and Poona Divisions. The Conservator attributed the increase to the usual causes, *viz.*, careless way-farer, the grass permit holder and the roaming Bhil, but above all to the suspension of the system of communal punishment which, he remarks, has increased irresponsibility on the part of the public and has without any doubt much to do with the larger area burnt—a view with which the Collectors of West Khandesh and Satara agree. The Conservator also

attributes these fires to the policy of 'prohibition' practised in West Khandesh. As regards early burning the Conservator, C. C., remarks as under :—

'Early burning' has been tried as a preventive measure against fire in the East Khandesh Division during the year. As the operation was carried out so late as the 4th January 1928, it did more harm than good. The grass was far too dry at the time it was burnt, with the result that the early burning in high grass areas, at any rate, was just about as destructive as a late fire would have been. Early burning is a subject on which widely diverse opinions are held, and the writer is distinctly against the practice as he has never seen any large area where the results were favourable.

'Conditions were found to be unsuitable for early burning in the North Khandesh Division except in the Akrani and the inaccessible hill forests of the Taloda Range.'

The Collector of East Khandesh observes :—

'As for the fire offences, accident has much to say in this matter ; and the season was no doubt an extraordinarily hot and dry one. In such a season it is particularly essential that early burning should be done in good time.'"

Commissioner, Southern Division (Mr. H. L. Painter, I.C.S.) :—

Kolaba.

"*Financial Results.*—The year was not a successful one financially, since the revenue fell by nearly Rs. 5,000, this being ascribed to the continued depression in the timber and fuel market on account of which many coupes could not be sold. The revenues in Kolaba have been receding year after year, the percentage of surplus which was 18·5 in 1926-27 having dropped to 7·3 this year as against 30·9 reached year before last. Payment of arrears of Khoti shares no doubt partly accounts for the low percentage but the main contributing cause is the continued slump in the timber market, and unless it improves there is little prospect of any financial rehabilitation.

Research and experiment.—Though the Division records a poor financial year, its progress in the field of research and experiment has been well sustained. Restocking of the annually exploited areas by teak seedlings has become a well established routine in the Division and the establishment of a nursery in the Pen Range should ensure further progress in this direction. The Divisional Forest Officer's enterprise in introducing the Manvel bamboo is being rewarded, and it has been found possible to extend old plantations by transplanting the culms. Casuarina plantations continue to receive good attention from the Department.

Forest Offences.—The total number shows an increase of 100. Against a decrease of 36, 21 and 1 under fire, grazing and other offences respectively, there was an increase of 158 under unauthorised fellings and the Commissioner agrees with the Collector that the increase cannot be wholly ascribed to suspension of communal punishments. The increase is not

alarming and in view of the fact that the offences were spread over a whole forest Division, and having regard to the very short period during which the system has been in force, the Commissioner considers that further experience is essential if its results are to be correctly appraised.

Communications and buildings.—The construction of a bridle-path from Bandh to Sakurda would facilitate exploitation but the value of Ratnagiri forests does not justify giving this work precedence over the more important ones held up in the Southern Circle. The work may be undertaken if and when funds permit.

General.—The report makes no mention of progress in the clearing of Government Teak in Malki numbers under the recently sanctioned arrangements transferring this duty to the Forest Department, and it seems desirable that future reports should refer to this important feature of the year's administration. The defalcation of Government money to the extent of Rs. 5,000 by the manipulation of accounts over a number of years, by the late Head Clerk to the Divisional Forest Officer, discloses the need for stricter audit in the office, which sending duplicate copies to the Accountant General may assist.

In other respects administration, especially in the matter of silviculture and research, has been satisfactory and the Commissioner concurs in the Collector's appreciation of the Divisional Forest Officer's work."

Southern Circle.

"The results of the year's working are satisfactory. The continued slump in the timber trade, the poor quality of some of the coupes and the paucity of contractors willing to carry on at reasonable rates are mainly responsible for the arrears in the prescriptions of the standard working plans.

The Commissioner shares the Conservator's regrets that the allotments for communications and buildings could not be utilised in full. It is explained that in some cases labour was scarce while in others contractors were not sufficiently punctual. The system of entrusting villagers with the repairs to their forest roads reported to have been successful in the Satara District, might be considered.

Forest offences show the usual variations and these do not call for any special remarks. The total number of offences decreased by 275, all the Divisions except Kanara N. D. and Dharwar-Bijapur, contributing to the decrease as under :—

Kanara N. D.	+ 64
„ E. D.	— 11
„ S. D.	— 60
„ W. D.	— 112
„ C. D.	— 130
Belgaum	— 173
Dharwar-Bijapur	+ 147
	— 275

Cattle impoundings increased from 17,275 to 17,628, all the Divisions except Kanara W. D. (*minus* 33) and Belgaum (*minus* 578) contributing to the increase in varying proportions. The great drop in Belgaum is attributed by the Conservator to the terroristic methods of the villagers in Gunji and Nandgad Rounds where a Forest Guard was murdered in 1925, while attempting to impound cattle. The acquittal of the accused in a recent case in which a forest guard was assaulted in the Nandgad Round is reported to have exacerbated the feeling against the subordinate establishment with the result that it has become difficult to collect evidence in forest cases.

The report records substantial progress made in plantations and their regenerations. The Casuarina plantation under the Revenue Department in the Ratnagiri District was inspected by the Divisional Forest Officer, Kolaba, and his suggestions regarding future thinnings, rotation and financial aspects have been sent to the Collector for guidance.

Despite the failure of logging contractors to finish their work in time and the poor outturn in Kanara N. D. the total quantity of timber extracted and brought to depôts was greater than last year ; the increase is attributed to the large number of works carried out in Kanara E. D., C. D. and S. D. and also to the management by the Department of the three fuel depôts in Kanara. Sandalwood fetched good prices but the prices of other species except teak were low.

The three Government saw mills made a net profit of Rs. 2,97,812, *i.e.*, Rs. 90,000 in excess of last year's earnings. Receipts from other heads show some variations and the net financial result shows a decrease of Rs. 1,26,000 in the total revenue earned. The reasons for this decrease are satisfactorily explained by the Conservator. Expenditure increased by Rs. 19,000. The earnings of the Alnawar-Dandeli Railway recorded a big drop which in the Conservator's opinion would have been averted by an adequate provision of empty waggons.

Any all round increase in the revenue being contingent on the general conditions of the market the financial results of the year cannot be said to have been bad.

Kumri assignments on the lines indicated in Government Resolution, Revenue Department, No. 4755, dated 28th March 1927 seem to have satisfied the people concerned.

The administration by the Department of the Forest Mahals continued to be satisfactory. The seven Village Panchayats in the Kanara Coast Division are reported to have functioned well and the Commissioner has already intimated to the Collector that proposals with regard to extending this system of Panchayat management are awaited.

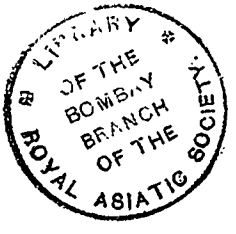
Civil litigation against defaulting contractors and their sureties is still burdensome to the Department.

The year covers a period of strenuous work, and the results that the Conservator and his Divisional Forest Officers have been able to record

in face of trade depression, paucity of labour and recalcitrancy reflect credit on all concerned. The relations between the Revenue Department and Forest Department were cordial throughout."

H. L. NEWMAN,
Chief Conservator of Forests,
Bombay Presidency.

Poona, 15th October 1928.



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Report.

Forest Department.

Administration — of, in the Bombay Presidency, including Sind, for the year 1927-28.

GOVERNMENT OF BOMBAY.

REVENUE DEPARTMENT.

Resolution No. P. 57/1657.

Bombay Castle, 26th March 1929.

Letter from the Chief Conservator of Forests (Mr. H. L. Newman) No. 2643 dated 19th October 1928—Submitting the Forest Administration Report of the Bombay Presidency, including Sind, for the year 1927-28.

RESOLUTION.—The acute depression in the timber trade was reflected in the financial results of the year's working. The gross revenue of the year fell by Rs. 3,70,543, *i.e.*, from Rs. 76,56,420 in 1926-27 to Rs. 72,85,877 in 1927-28 and was Rs. 49,789 below the average of the preceding five years. Excepting the Central Circle where the revenue rose by Rs. 80,000 on account of the recovery of five years' arrears of rent for the grass kurans leased to the Military Department in the Poona Division, all the other circles showed diminished revenues. The slight decrease in expenditure from Rs. 43,86,012 in 1926-27 to Rs. 43,06,833 in 1927-28 is to be mainly attributed to the reduction of expenditure in the Engineering Branch.

2. The net profit from the working of the six Government saw-mills was Rs. 3,35,916 as against Rs. 1,40,800 for the preceding year, the Northern Circle and the Southern Circle contributing Rs. 99,001 and Rs. 96,115 respectively. Government agree with the Chief Conservator that this remarkable increase in the profits was the result of greater efficiency displayed in the running of the mills, and that for this much credit is due to Mr. Mirchandani, the Mill Foremen and the Divisional Forest Officers concerned. At the end of the year under report one small portable mill called the Foden Portable Saw Mill was provided in N. D. Kanara.

3. The value of the major and minor produce removed by purchasers was Rs. 28,63,000 and Rs. 11,95,000 respectively as against Rs. 31,61,000 and Rs. 11,31,000 in the preceding year. Major and minor produce

removed by concessionists and free grantees amounted to Rs. 12,16,000 as against Rs. 10,18,000.

4. Although the number of cattle admitted to grazing increased from 2,433,107 in 1926-27 to 2,482,063 in 1927-28, the grazing revenue decreased from Rs. 5,30,691 to Rs. 5,04,108. The decrease is attributed partly to a greater number of cattle being admitted to free grazing and partly to the non-enforcement of communal penalties in the form of enhancement of grazing fees. Government realize the difficulties inherent in the levy of different rates for different classes of cattle based upon residence and ownership, but they consider that such differences cannot be altogether avoided in the peculiar circumstances of the country. They, however, hope that the revised grazing rules which have been recently sanctioned and which will be put into force from the next grazing season will to some extent minimise these difficulties.

5. Government view with anxiety the increase in the number of forest fires following upon the suspension of the system of communal punishment in the districts of East Khandesh, West Khandesh and Satara. If this increase is maintained in the present year, Government will have seriously to consider whether the experiment started in the three districts should not be discontinued.

6. In pursuance of the orders passed on the report of the Forest Grievances Enquiry Committee, Government have now ordered the appointment of Forest Advisory Committees in the districts of Thana, Panch Mahals, Nasik, East Khandesh, West Khandesh, Kolaba, Dharwar and Kanara. They await with interest the results of this experiment.

7. The thanks of Government are due to the Chief Conservator and the officers serving under him for the efficient working of the department during the year under report.

By order of the Government of Bombay
(Transferred Departments),

G. K. JOSHI,
Under Secretary to Government.

To

The Commissioner in Sind,
The Commissioners of Divisions,
The Settlement Commissioner and Director of Land Records,
All Collectors, including the Deputy Commissioner, Upper Sind Frontier,
The Chief Conservator of Forests,
The Conservators of Forests, Northern, Central, Southern and Sind Circles,
The Director of Agriculture,

gitized with financial assistance from th
Government of Maharashtra
on 11 July, 2017

The Accountant General,
The Director of Industries,
The Compiler, General Administration Report,
The Director of Information and Labour Intelligence,
The Oriental Translator to Government,
The Secretary, Legislative Council (for the Reading Room for the members of the Legislative Council),
The General Department,
The Finance Department,
The Public Works Department,
The Secretary to the High Commissioner for India, London.